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# MAKERS OF JOHN HUNTER*

BY

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It has been the custom at this festival to recollect with gratitude the names and works of our Fellows recently deceased. Since the last Oration three years ago more than a hundred Fellows have died. The roll of those who have passed on is indeed one of which the College may be proud. It includes the names of two Past-Presidents—my old chief and kind friend Sir John Bland-Sutton, the John Hunter of his time, and Lord Moynihan, who, following Lister, brilliantly represented surgery in the House of Peers. Scotland has lost Sir David Wilkie, a great and arresting teacher and a delightful man. Sir Charles Ballance, remaining to the last a working student of neurology within these walls, has passed away at a ripe age. Albert Carless and Charles C. Choyce were known as authors of successful textbooks of surgery, and Choyce also as representing the reflux of the Empire's sons to the homeland, for he came from New Zealand. Professor G. A. Buckmaster and Professor William Wright had done strenuous service to this College as examiners for the Oversea Primary Fellowship examinations. Sir Squire Sprigge's name recalls his long, influential, and impartial editorship of the *Lancet*. Ophthalmic surgery deplores the loss of William Lang and of Robert Henry Elliot, and of my friend Claud Worth, a pioneer in the treatment of squint and a leading authority on the design and management of small yachts. Professor Henry Tonks, artist and director of the Slade School, was one of many successful renegades from surgery. The names of Percy Furnivall, surgeon to the London Hospital, of Sir Robert Hill, late Director-General of the Naval Medical Service, of John Poland, of Sir John Thomson-Walker, and of Professor Rutherford Morison, of Sir Hamilton Ballance, were but lately familiar on our tongues. I must not forget two promising Fellows who, alas! have received brevet rank in this list—Henry Philbrick Nelson and Charles Shorney Webb. *Ave atque vale.* I rejoice to think that Sir D'Arcy Power, in his *Lives of the Fellows*, will supply the defects of this brief survey of our losses, and that nearly 300 new Fellows have taken their places in the unending procession.

It is a tribute to the broad-mindedness of my countrymen that John Hunter, the presiding genius of this College of Surgeons of England, was not an Englishman. Nothing, unless it be the Crown itself, could better illustrate the unity of this island of Great Britain or the beneficent exchanges between its Northern and Southern parts which have followed the Act of Union of 1707—exchanges which gave the Hunters to England and Lister for a time and at a later period to Scotland. It would be a mistake, however, to regard John Hunter as a missionary from the North *in partibus infidelium*. His medical education was due entirely to London, and he received it primarily from his elder brother. William Hunter, also, though indebted to Scotland for his literary education, for his medical apprenticeship to Cullen—a physician of the old systematic school—and for one year's attendance at Edinburgh University, found his inspiration in his "darling London" in the house of Dr. James Douglas, the leading anatomist of his time and an admirer and disciple of William Harvey.

It is to-day my main object to trace the intellectual descent of Hunter from Harvey, for I believe it has been overlooked. You shall judge of the evidence and I will present it with a minimum of comment. I wish specially to speak of William Hunter, once a member of the staff of Middlesex Hospital, which I now am privileged to serve. Others who come into my story of the makers of Hunter are the brothers James and John Douglas, Cheselden of St. Thomas's and the Westminster Hospitals, pupil of James Douglas and teacher of John Hunter, and Mrs. John Hunter.

### Surgery in the Early Eighteenth Century

The surgeon of the period following the Act of Union of 1707 was often a Scot, and he can be studied in the frank pages of *Roderick Random* by Smollett, who, like his hero, was a naval surgeon. This book had an instant success, and may have determined John Hunter's choice of a profession. It was published in 1748, the year he came to London, and its rough candour would be likely to appeal to him.

### William Harvey

The discovery of America by Cabot and Columbus at the end of the fifteenth century discredited ancient geography and awakened in other branches of science the spirit of enterprise and inquiry, of first-hand observation and experiment. At Padua, when Harvey (1578–1657) went to that university about the year 1600, Galileo was reforming Ptolemy's astronomy. Harvey was the first Englishman to use the new highway to medical knowledge. The critical date when medical tradition in England began to be replaced by observation and experiment is 1628, the year when Harvey published his work on the circulation, *De Motu Cordis et Sanguinis*. Harvey says: "I have not endeavoured from causes and probable principles to demonstrate my propositions, but as of higher authority, to establish them by appeals to sense and experiment." In these simple words he announced a revolution of thought and made St. Bartholomew's Hospital the English cradle of modern physiology and morbid

*An abstract of the Hunterian Oration delivered before the Royal College of Surgeons of England on February 14.

anatomy. Harvey planned a book on "medical anatomy" based upon "the many dissections I have made of persons diseased, worn out by serious and strange affections, how and in what way the internal organs were changed from their natural form and appearances."

My main object is to show how, through James Douglas, his brother John Douglas, and William Hunter, John Hunter learnt the methods of Harvey, which he applied to surgery with such far-reaching results. According to Buckle the Scottish mind is deductive rather than inductive, and this was certainly true in the eighteenth century. Delighting in a complete and logical structure of belief, the deductive mind prefers to start with a set of general principles, instead of working up to them from particular instances. It is therefore something of an anomaly that the Harveian method was first applied to surgery on a large scale by a Scotsman. When John Hunter arrived in London at the age of 20 his mind was practically a clean slate, and his delight in nature was a vague boyish wonder. He said later: "When I was a boy I wanted to know all about the clouds and the grasses, and why the leaves changed colour in the autumn; I watched the ants, bees, birds, tadpoles, and caddis-worms; I pestered people with questions about what nobody knew or cared anything about." William Hunter showed him how to work, planting his feet firmly upon the shoulders of his predecessors.

### James Douglas

James Douglas, the teacher and exemplar of William Hunter, came like the Hunters of the class of Scottish minor lairds which corresponds to the English yeoman class of which Harvey sprang. In 1706 from "the Blew Boar over against the end of Fetter Lane" he announced a course of human and comparative anatomy. In 1707 he published the first extant work on comparative anatomy, called *A Comparative Description of the Muscles in Man and a Quadruped*. He says: "I took all the descriptions from ocular inspection, in dissection, using twelve subjects to make sure. . . . I chose a dog for comparison, because young students of anatomy may readily procure so common a subject." After twenty-five lectures on anatomy, illustrated by his own dissections, he passed to comparative anatomy, and then to a detailed syllabus of physiology. This was forty-one years before John Hunter arrived in London.

Though not a member of the staff, James Douglas appears to have had the freedom of St. Bartholomew's Hospital, for he studied the anatomy of disease and was permitted to make necropsies there. It is recorded that, long before Laennec and his stethoscope, he heard in the hospital an aortic murmur. In 1715 he published a general *Bibliography of Anatomy "from Hippocrates to Harvey,"* and was appointed Arris Lecturer on the muscles at Barber-Surgeons' Hall. The book shows fair-mindedness and scholarship, and complete lack of egotism and self-glorification. It is of special interest as disclosing the source of his inspiration, not only in its title but in its references to Harvey, whom he calls *senex divinus*. The whole literary world, he says, deplores the loss of the manuscript treatises of Harvey, which disappeared in the confusions of the Civil War. His dislike of acrid controversy appears in his remark that "though reproved and provoked by many, Harvey forbore to reply except to Riolan, and to him gave criticism rather than rebuke."

James Douglas realized the need of surgery for anatomical knowledge, and had in his house a complete collection of preparations showing every possible surgical method of reaching the interior of the bladder and the advantages and inconveniences of each method so far as these depend upon the structure of the parts. In 1730 he published his *Description of the Peritoneum*, for he is Douglas of Douglas's pouch and semilunar fold. His youngest brother, George, dedicated to James Douglas "with the utmost sincerity, gratitude, and respect" a translation of *Winslow's Anatomy*. The dedication declares: "To you I owe all that I know, not only of the Science, but of the stile of Anatomy, and there is not one good line in this Translation which is not the better for what you have taught me, or procured me opportunities of learning." Every contemporary reference to James Douglas appears to be equally cordial and friendly. Cheselden calls him "that most accurate and indefatigable anatomist," and Warburton, the biographer of Pope, calls him "a physician of great learning and no less taste." It is perhaps characteristic of the man that he left behind no portrait of himself. He was buried at St. Andrew's, Holborn, the parish in which he lived, but even his grave has disappeared. It lay somewhere beneath the present Holborn Viaduct.

### John Douglas

John Douglas, doubtless helped by James, who was always ready to serve others, applied his brother's anatomical lessons to surgery and was the first surgeon to practise suprapubic lithotomy. He was led to the operation by instances within his knowledge of recovery after penetration of the bladder by the horn of a bull, by gunshot, and by a sword. Like James, John wished to acknowledge the merits of others, and at the end of his book *Lithotomia Douglasiana* (1723) he gave in full the early work of Rousset (*De Partu Caesario*, 1581), the French surgeon, who had suggested but not performed the suprapubic operation in the sixteenth century. Rousset was unfortunate. He says sadly: "The lamentable Fate of King Henry III (who had promised me four or more Persons that were condemned to Death to make the Experiment upon, and them their lives if they recovered) deprived me of the Opportunity."

### William Cheselden

After a vogue of only about seven years the suprapubic operation of John Douglas was replaced by Cheselden's lateral operation. Cheselden cured fifty out of his first fifty-two patients at St. Thomas's Hospital and Westminster Infirmary, and his success greatly alarmed the surgeons of Paris. He was one of James Douglas's early pupils, and there can be no doubt that he owed his success largely to his master in anatomy. It is significant of James Douglas's open-mindedness that he became an advocate of Cheselden's method in preference to his brother's operation. He says: "Mr. Cheselden is much less sollicitous for the credit of being an inventor than he is to have his operation understood and practised in a right manner for the good of the public"—a good keynote for the young profession of surgery. It was Cheselden who, in old age, gave John Hunter his first lessons in the art.

### William Hunter (1718-83)

William Hunter, born at Long Calderwood, Lanarkshire, was a serious and quiet boy, ten years older than John. Quite early he took a firm grip of himself, which never relaxed. No hypocrite, he was emphatically a good boy who never gave a moment's anxiety to his parents and teachers. Mrs. Baillie, contrasting the characters of the two boys, preferred that tempestuous infant John, a

notorious cry-baby and rebel, to the good but enigmatic William. For five years William was a theological student at Glasgow. In 1740 for a year he studied medicine in Edinburgh under Monro the first, but in 1741 he decided to try his fortune in London. He was the pioneer who prepared the way for John. In succession to Samuel Sharpe of Guy's Hospital he became lecturer to a society of naval surgeons. He was fortunate in becoming assistant to Dr. James Douglas, whose career we have already traced. William lived in Douglas's house, and became affianced to his daughter. Her early death broke the romance, and he never married. His paternal instincts found an outlet in the education of his brother John, whom he vainly tried to make into an Oxonian, and later in his care of his sister's brilliant children, Matthew and Joanna Baillie. In 1746 William Hunter advertised his first private course of anatomy, as James Douglas had done forty years earlier, and to the end of his life anatomy and the teaching of it were his ruling interests. But he took up the practice of man-midwife and became Physician to the Queen. In this, as in many other respects—for instance, the collection of editions of Horace—he followed closely the footsteps of James Douglas.

In 1767 he was elected a Fellow of the Royal Society, and in 1768 professor of anatomy in the newly established Royal Academy. He now, in the quaint language of that day, "extended his views to fossils, and likewise to the promotion of polite literature and erudition." In a short time he owned "the most magnificent treasure of Greek and Latin books that has been accumulated by any person now living since the days of Mead." Upon the coins in his museum he spent more than twenty thousand pounds.

At this period of his life William Hunter had become almost a national figure—a famous anatomist, a friend of the Sovereign, and the trusted physician of the Queen, a celebrated dilettante and princely collector, meeting artists and literary men on their own ground. Little can he have thought that his brother John was destined to surpass him in reputation. He died in 1783 a few days after leaving a sick-bed to lecture at his Great Windmill Street school. He bequeathed his museum to the University of Glasgow, his old alma mater.

Can it be doubted that the mainspring of John's career was a fierce determination that he, the ne'er-do-weel of the family up to the age of 20, would show his ability to surpass William's brilliant achievements? The rivalry, at first unconscious and for many years quite friendly, exploded in the quarrel which separated the brothers in their latest years, only to be partly made up just before William's death.

### The Great Windmill Street School of Anatomy

The Great Windmill Street school, comprising a spacious house, a lecture theatre, dissection-rooms, and a great museum, was founded by William Hunter in 1770 after the rejection by the Government of his generous offer to erect and endow at his own expense a national school of anatomy. It was the earliest complete anatomical school in London, and the first to adopt the Paris system by which the student himself dissects the whole body under supervision of the teacher. William Hunter had a passion for teaching, and says of himself: "To acquire knowledge and to communicate it to others has been the pleasure, the business, and the ambition of my life." He preferred to teach by word of mouth rather than by his pen, and continued to do so for thirty-six years.

The smallness of his literary output has tended to dwarf William's stature in comparison with his brother's, but for style and clarity John cannot compare with him. One classic work on the gravid uterus, two perfectly finished introductory lectures to his anatomy course, and a few scattered clinical papers are his only literary remains if we except his strangely named *Medical Commentaries*, a passionately controversial work wrung from him by what he regarded as an attack upon his honour by Monro the second. We must regret the nerve energy expended on this volume. Harvey was wiser, and left his detractors alone. William Hunter can be judged partly by the impression he produced upon his contemporaries; and Matthew Baillie said he was perhaps the best anatomical teacher that ever lived. But he should be estimated mainly by the history of his school and by its contributions to anatomy.

### William Hunter and the Lymphatic System

William Hunter was the first to enunciate correct views, based upon rational grounds, of the structure and functions of the lymphatic system. In so doing he ran contrary to the doctrines of Harvey, who thought that the lacteals contained milk, not chyle—that is, fluid derived from the digestion of the food. William Hunter, who was inclined to think Harvey overrated, denied the absorption of fluid from the bowel by the portal venous system, and in this he was wrong. In other respects his views on the lymphatic system constituted a great advance. It was William Hunter who taught, trained, and paid Hewson and Cruickshank. After his death each of these two men published master-works on lymphatic anatomy. But for William Hunter their works would not have been written, and their writings rather than his own proclaim William Hunter the founder of lymphatic anatomy in this country.

William Hunter says: "But none of the Anatomists of those times could make out the origin of the lymphatics, and none of the Physiologists could give a satisfactory account of their use." He then proceeds to put forward unequivocally his own claims, as having been the first to form a correct general notion of the anatomy and functions of the lymphatic system. In his own words:

> "I think I have proved that the lymphatic vessels are the absorbing vessels all over the body; that they are the same as the lacteals; and that these altogether, with the thoracic duct, constitute one great and general system, dispersed through the whole body for absorption; that this system only does absorb, and not the veins; that it serves to take up and convey, whatever is to make, or to be mixed with the blood, from the skin, from the intestinal canal, and from all the internal cavities or surfaces whatsoever. This discovery gains credit daily . . . and if we mistake not, in a proper time, it will be allowed to be the greatest discovery, both in physiology and pathology, that Anatomy has suggested, since the discovery of the circulation."

A little later he adds: "Since the days of Aristotle there have been only two great inventions in the physiology of our bodies: to wit, the circulation of the blood, and the absorbent system." He contrasts the triviality of the discovery of a new anatomical detail such as a duct or a muscle as compared with the importance of "a new general system, which is interwoven with and performs a peculiar and important function in every part of the body." Anatomists had believed that the lymphatic system was wanting in birds and fishes, and William Hunter, not satisfied on this point, kept it constantly in view.

"Accordingly, my brother Mr. John Hunter, whom I bred to practical anatomy, and who worked for me, and attended my dissecting-room, and read some lectures for me many years, found some lymphatics, first in birds, and then in a crocodile."

From John Hunter's experiments he inferred, erroneously, that the veins do not absorb fluids. Later William Hunter directed the work of his assistants and pupils Hewson and Cruickshank, and planned with Cruickshank a joint and richly illustrated work on the lymphatic system. Cruickshank in the preface to his *Anatomy of the Absorbing Vessels* (second edition, 1790) says: "In consequence of Dr. Hunter's death this business has now fallen on me. I should have had no small share in it had he lived, for I had made almost all the preparations from which the drawings were made."

Cruickshank recorded many interesting observations on the lymphatic vessels. He saw tributaries of the intercostal lymphatics emerging from the body of a vertebra and traced their ramifications in the bone. This is the most probable route by which spinal deposits reach the upper dorsal spine in breast carcinoma. I have shown that the glands of the anterior mediastinum may be infected as early as the axillary glands; thence the infection probably reaches the spine along the lymphatic vessels of the upper intercostal spaces.

It would be difficult to find a better instance of the surgical value of lymphatic anatomy, for, given precise knowledge upon the subject, the prevention and treatment of these late spinal deposits could be hopefully approached by radiologists and radio-surgeons. Spinal metastasis is increasing in frequency owing to the elimination of fatal local recurrence by improved operative methods. Pathologists are too busy with their vast subject to supply the help surgeons and radiologists need in this matter. Some young surgeon or radiologist with a research scholarship should devote two or three years to the solution of the problem, and become his own pathologist for his own special needs in the light of Cruickshank's observation. It may be doubted whether in any anatomical school in Great Britain freshly injected specimens of the lymphatics are to be seen at the present time, though I recall the lymphatic work of Professor Jamieson of Leeds, and the associated surgical work of the late J. F. Dobson and of Professor L. R. Braithwaite. At Charing Cross Hospital the late H. S. Clogg did notable work on the surgical lymphatic anatomy of the tongue. Mr. R. H. Burne, F.R.S., then Physiological Curator of our Museum, discovered in 1928 a new system of fine lymphatic vessels in the angler fish. But further intensive work on the anatomy and physiology of the lymphatic system is required.

In cancer research at the present time two theories of origin—the virus theory and the chemical (tar) theory—face each other in apparent contradiction, each supported by substantial evidence, and each ignoring the undoubted production of cancer by physical agents such as light. Attempts to reconcile them involve very difficult assumptions, such as the almost universal presence of the cancer virus, or the formation in the body of cancerogenic hydrocarbons. The observation made by myself (*Genesis of Cancer*, 1931, H. K. Lewis) that in areas of tissue about to become cancerous the lymphatic vessels are obliterated, has been ignored by pathologists, but it is the most likely clue to the unravelling of the tangle. If the whole character of the vegetation of a field can be radically altered by blocking of the pipes which drain it, it is hardly surprising if local chronic lymph-stasis in the body may ultimately breed a race of cancer cells. The virus and the tar are in my view cancerogenic agents because they set up in the lymphatic vessels an obliterative lymphangitis.

Research scholarships specifically restricted to the lymphatic system are urgently needed, and this College would doubtless be willing to administer them under the able superintendence of Professor Beattie in our new Bernhard Baron Research Laboratories or at the Buckston Browne Farm. The work of William Hunter has been left half finished.

### Mrs. John Hunter

In July, 1771, John Hunter married Anne Home, then aged 29, daughter of an Army surgeon in Burgoyne's Regiment of Horse. She seems to have been a lady of wonderful charm and social gifts. Charles Rogers (*The Modern Scottish Minstrel*, 1855) says of her:

"During the lifetime of her distinguished husband, Mrs. Hunter was in the habit of receiving at her table and sharing in the conversation of the chief literary persons of her time. Her evening conversazioni were frequented by many of the more learned, as well as fashionable persons in the metropolis. She was the life of her social parties, sustaining the happiness of the hour by her elegant conversation, and encouraging the diffident by her approbation. Amiable in disposition, she was possessed of a beautiful countenance and a handsome person. She wrote verses with facility, but she sought no distinction as a poet, preferring to be regarded as a good housewife and an agreeable member of society."

Among the lions of Mrs. Hunter's salon were the composer Haydn and Mrs. Montague, founder of the Blue Stocking Club—evidently a mixed club, for it took its name from the colour of the hose of Benjamin Stillingfleet, son of a bishop, traveller, naturalist, and oracle of the club. Mrs. Hunter supplied Haydn with the words of Haydn's *Englische Original-Canzonetten*, a book of twelve songs, of which the best known is "My mother bids me bind my hair," a touching ditty still familiar. She also wrote the libretto of Haydn's *Creation*.

Haydn, who speaks of John as "the greatest and most celebrated surgeon in London" (1792), appears to have intensely enjoyed his London visit. His last appearance in Leicester Square was, however, not too pleasant. John Hunter had frequently pressed him to consent to the removal of a nasal polypus which troubled him, but Haydn postponed the appointment from week to week. Learning of Haydn's imminent departure from London, Hunter invited him to come to Leicester Square for urgent but unspecified reasons.

"After the first compliments several stout fellows entered, seized me, and would have put me on a chair. I shrieked, shouted blue murder and let out lustily with my feet until I freed myself and made Herr Hunter, who stood ready with his instruments, understand that I absolutely refused operation. He was astonished at my obstinacy, and pitied me that I did not wish to be so lucky as to try his skill. I excused myself on the ground of lack of time in view of my approaching journey, and took my leave."

It may be added that only death parted Haydn from his polypus. It may also be presumed that the reactions of Mrs. Hunter's social evenings upon her husband's practice were usually more favourable. We are told that people were known to have consulted Mr. Hunter professionally in the hope of an invitation from Mrs. Hunter.

It was doubtless partly for her and her parties and the special coach and coachman he provided for her that her proud and generous husband needed the "damned guineas." Surgeons' wives who envy her should remember that she had a museum in each of her two houses. Her contribution to surgery was John Hunter's happiness. Let

us in recalling her memory, as of eighteenth-century pot-pourri, also more vividly recall what we owe each of us to his own wife. There should be a special petition in the Litany for the women whose domestic routine is daily at the mercy of the acute appendix and the perforated gastric ulcer.

## CHEMOTHERAPY OF GONORRHOEA

BY

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Efforts in the past two decades have not reduced the incidence of gonorrhoea. That of syphilitic fresh infections, however, has been much reduced: arsenobenzol preparations have undoubtedly contributed to the reduction of syphilis. The advent of sulphonamide compounds has brought a ray of hope to sufferers from gonorrhoea and to those daily engaged in the treatment of such patients. These hopes were raised considerably when Dees and Colston (1937) reported cures with sulphanilamide in thirty-six patients out of forty-seven in five days. The publication of these results stimulated many workers elsewhere, and a number of reports appeared recording excellent rates of cure in gonorrhoea. Hanschell (1938) investigated ninety-nine male gonorrhoeal patients and found five failures. His observation, however, lasted only two weeks from cessation of treatment. At a meeting of the Society for the Study of Venereal Diseases in October, 1937, all the speakers reported highly of this drug in the treatment of gonorrhoea. Only Anwyl-Davies stated that he had had less than 50 per cent. of successes with sulphanilamide. The dosage of the drug, the total amount administered in a given time, the toxicity, and the minimum number of days of treatment had not been worked out, and on account of this it was difficult to ascertain the apparent or the real cure rate in gonorrhoea.

Before there had been time to work out these problems and to pool many results uleron and "delayed" methods of treatment appeared on the scene, and, later on, M & B 693. Meanwhile Cokkinis and McElligott (1938) published an analysis of 633 cases of both sexes treated with sulphanilamide and an account of their evolved "optimum technique" of administration, by which, at the time of publication, they expected an 80 per cent. cure rate. In describing this new technique these authors advise the use of gonococcal vaccines before and throughout chemotherapy, and state that chemotherapy should start on the eighth to the tenth day of disease. It is of interest to observe that they treated a large group of patients with sulphanilamide only, a larger group with sulphanilamide and irrigations, and a smaller group with sulphanilamide and vaccines, obtaining the best results in the smallest group. The actual number of cases investigated with regard to the optimum time to begin therapy was 404. In twenty-four of these treatment was started on the eighth to tenth day, nineteen being cured and five relapsing. The most important fact, however, is that in one course of sulphanilamide (twenty-one days) these authors cured 240 male patients out of 491—a permanent-cure rate of 49 per cent.

Realizing that gonorrhoea is a disease of the working out-patient population, and that the elusiveness of the gonococcus is notorious in the female sex, I resolved in August, 1937, to carry out my investigation in male ambulatory patients rather than in women or in-patients. This does not mean that I have not treated in-patients or women and children with sulphanilamide. Investigation with prontosil album began in August, 1937, with uleron in March, 1938, and with M & B 693 in July, 1938. One hundred cases were treated with prontosil album ("immediate therapy"), fifty with uleron ("delayed therapy"), and fifty with M & B 693 ("immediate therapy"). All cases were fresh acute infections in the male sex, and the investigation began on the first visit of each patient.

### Prontosil Album

#### TECHNIQUE OF ADMINISTRATION

The aim has been to treat each case for three weeks, to give 1 gramme thrice daily, to give a total amount of 63 grammes in twenty-one days and no more, and also to observe the disappearance of gonococci and to see how many cures could be made in twenty-one days. During chemotherapy each case had daily lavage of the whole urethra for the same number of days. Apart from the above items no other adjuvant treatment was given. In every case the diagnosis was confirmed bacteriologically. Patients were seen daily, urethral smears examined and recorded on each visit, and urines examined and charted. One day's supply of prontosil album was issued to the patients in order to encourage them to attend daily. All patients were advised to abstain from sexual excitement and alcohol; to avoid eggs, onions, garlic, and laxatives containing sulphur. Intolerance to the drug and extension of the disease were specially observed. On the twenty-second day treatment was stopped and the following tests were carried out:

1st week.—Beer given, followed by daily slides.
2nd week.—Aolan intradermally. The following day urethral smears and prostatic excretion were examined under the microscope.
3rd week.—Urethroscopic examination. Massage of the whole urethra over Watson's sound.
4th week.—Aolan as in second week.
5th week.—Silver nitrate 1 per cent. instilled into the posterior and the anterior urethra. On the following day smears and excretion from prostate examined for gonococci and pus. Also culture for gonococci.
Rest for eight weeks.
13th week.—General clinical examination of the urethra, urine, etc. Gonococcal flocculation test.

If the patient passes the above tests in the scheduled time he is considered to be cured. This method of observation has been applied to uleron and M & B 693 cases exactly as above, and is our standard for all male gonorrhoea cases.

*Results.*—Of 100 cases treated with prontosil, in forty-six the anterior urethra only was affected and in fifty-four the posterior urethra. Of these 100 cases, two defaulted, two transferred to other clinics, fourteen abandoned treatment on account of severe reactions, and eighty-two completed the course. Of these eighty-two cases, thirty-eight were permanently cured—cure rate 46.3 per cent. (that is, under 50 per cent.)—forty-three relapsed, and one ceased to attend during observation. The disappearance of gonococci was erratic. Of the cured cases seventeen were anterior and twenty-one posterior at the beginning of treatment, and of the relapses twenty-one were anterior and twenty-two posterior. Posterior cases became anterior within three days of starting treatment. Compared with routine methods this is a great improvement.

*Toxic Reactions.*—Toxic reactions occurred in 34 per cent. of the cases. In 14 per cent. these reactions were

considered severe enough for chemotherapy to be abandoned. None of the affected patients was admitted to hospital. No deaths occurred. In 20 per cent. the reactions were mild. The main toxic symptoms observed were nausea, headache, dizziness, blueness of the lips, various skin eruptions, and vomiting, and one case developed jaundice.

*Complications.*—Complications due to gonococci occur in 12 to 16 per cent. of cases treated by routine methods, and the actual percentage varies from year to year. Although the permanent-cure rate of gonorrhoea with prontosil album is under 50 per cent. its usefulness as a shortener of the disease, and particularly in preventing complications, is proved by these investigations. In the prontosil group only three cases developed complications—one epididymitis and two Tyson's gland affection. Even cases which relapsed bacteriologically had no complications later on during routine measures. The epididymitis patient attended regularly for eleven days, during which time he had 33 grammes of prontosil album. On the twelfth day he defaulted, and returned three weeks later with left epididymitis and gonococci present in urethral smears. He emphatically denied sexual exposure during period of default. In both cases of tysonitis the condition was eradicated by cauterization, as prontosil failed to effect a cure. The results obtained with prontosil album are summarized in the accompanying table, along with those of uleron and M & B 693.

*Table summarizing the Results of Chemotherapy*

| Therapeutic Agent | Gonococcal Urethritis | Permanent Cure | Apparent Cure | Relapses | Toxic Reactions | G.C. Complications | Transferred and Defaulted | Treatment Abandoned | Total No. of Cases Treated | Total No. of Patients |
|---|---|---|---|---|---|---|---|---|---|---|
| Prontosil Album .. | Anterior | 17 (17%) | Nil | 21 (21%) | 16 (16%) | 1 (1%) | Nil | 8 (8%) | 46 | 100 |
| | Posterior | 21 (21%) | 1 (1%) | 22 (22%) | 18 (18%) | 2 (2%) | 4 (4%) | 6 (6%) | 54 | |
| Uleron .. .. | Anterior | 13 (26%) | 2 (4%) | 4 (8%) | 3 (6%) | 3 (6%) | Nil | Nil | 19 | 50 |
| | Posterior | 15 (30%) | 4 (8%) | 12 (24%) | 1 (2%) | 7 (14%) | ,, | ,, | 31 | |
| M & B 693 .. | Anterior | 17 (34%) | Nil | 3 (6%) | 2 (4%) | Nil | ,, | ,, | 20 | 50 |
| | Posterior | 26 (52%) | 1 (2%) | 3 (6%) | 2 (4%) | ,, | ,, | ,, | 30 | |

## Uleron

This is a colourless substance with a slightly bitter taste and is described chemically as 4-(4'-amino-benzol-sulphonamide)-benzol-sulphon-dimethylamide. It dissolves with difficulty in water but readily with alkaline solvents. Uleron became available as soon as it was observed that a fair number of gonorrhoeal patients relapsed bacteriologically after treatment with sulphanilamide.

Felke (1937) suggested that acute gonorrhoea should be treated by local measures, including mild irrigations, uleron being administered after three weeks. If the gonococci failed to disappear after this treatment and the urine was not clear in four days, irrigations should again be resorted to and the drug repeated after a week's interval. Grütz (1937) treated thirty-six patients with uleron, giving 0.5 gramme three times on the first day and 0.5 gramme four times daily on the second, third, and fourth days without any adjuvant measures, and curing twenty-four cases. He had 66 per cent. successes and 34 per cent. failures. Fischer (1937) treated fifty-six cases with 3 grammes of uleron daily for three days, and repeated the same dosage on the eighth to tenth day. He found that recent gonorrhoea in the male did not respond to uleron, and advised mild irrigations for fourteen days followed by uleron in "Stosses." Alternatively to mild irrigations he recommended gonococcal vaccines, hot baths, sulphur, or haemotherapy. He obtained cure in twenty-one out of fifty-six cases. This is well under 50 per cent. of cures. Mergelsberg (1938a), using a maximum of three "Stosses," separated by suitable intervals and not exceeding a total of 12 grammes in three days, found in a military clinic that old gonorrhoea responded better than recent infection, and that the results were reasonably good in complications. Sixty-nine cases of the chronic disease which had had preliminary irrigations gave a 77 per cent. cure rate. In his later publication (Mergelsberg, 1938b) he obtained an improvement on the original figures to 87.5 per cent. of cures in a group of patients irrigated with 0.25 per cent. protargol solution when the first "Stoss" had failed. Many of the other Continental observers were impressed with the usefulness of this drug in the treatment of chronic gonorrhoea, and so delayed therapy and immunity came about.

It is fitting to remark at this stage that chronicity has accompanied gonorrhoea since the days of Moses, and immunity and vaccines have been with us since Neisser discovered the gonococcus and Bumm succeeded in cultivating it. Sulphanilamide preparations appeared on the scene, and were shown by preliminary reports to be able to nip the disease in the bud—while gonococci are settling in the anterior urethra—and thereby prevent extension, complications, chronicity, and immunity. Before these reports were confirmed some authors invoked "immunity," vaccines, and chronicity to assist the action of these preparations, which were prematurely designated chemotherapeutic agents for gonorrhoea. A true chemical agent should be able to effect a cure in the earliest stages of the disease unaided. In the majority of the chronic cases gonococci eventually disappear with any of the many methods of treatment, or even in spite of them.

Surgeon Commander Walsh (1938) treated forty-three male patients with uleron and potassium permanganate irrigations. He gave 0.5 gramme three times daily, and the number of uleron days was three to seventeen per patient. He cured twenty-two out of forty-three patients—that is, 51 per cent. He observed his patients for twenty-one days after treatment. His impression was that uleron shortened the duration of the disease and that chronic cases fare better than acute ones.

### CASES TREATED AT THE SALFORD CLINIC

Fifty male cases were treated with uleron at the Salford Clinic. All were acute infections, and the method adopted was as follows:

*Method of Treatment.*—On the first day, as soon as it was ascertained that the patient was suffering from gonorrhoea and whether the whole urethra was affected, he was given daily urethral lavage (potassium permanganate 1 in 10,000 anterior, 1 in 20,000 posterior cases) for exactly twenty-eight days (four weeks). Smears and urines were examined daily and the results recorded as

in the prontosil series. On the fifteenth, sixteenth, seventeenth, and eighteenth days of treatment the first "Stoss" of uleron was given—2 tablets thrice daily for four days, a total of 12 grammes. The second "Stoss" was given on the twenty-fifth, twenty-sixth, twenty-seventh, and twenty-eighth days. The total amount given each patient was thus 24 grammes, in two "Stosses." On the twenty-ninth day treatment was terminated and the tests of cure instituted exactly as for prontosil album cases—that is, observation for thirteen weeks after treatment, during which time tests were carried out.

*Results.*—Out of the fifty cases, 56 per cent. passed tests for cure, 12 per cent. ceased to attend in the fifth week of observation, and 32 per cent. relapsed. Relapses were all confirmed bacteriologically, and there is no evidence of reinfection. Of the cases 38 per cent. were anterior at the beginning of the treatment and 62 per cent. posterior. Of the anterior cases 68 per cent. were cured and 21 per cent. relapsed, whilst of the posterior ones 49 per cent. were cured and 38 per cent. relapsed. If it is assumed that the extension of the disease increases the bodily resistance against gonococci the results above do not support delayed therapy with uleron.

*Toxic Reactions.*—These were very mild in character, and occurred in four cases (8 per cent.) only. One patient complained of general malaise with slight pains in the joints (temperature 102°) for a few hours; another had tachycardia and weakness in the legs—no signs of peripheral neuritis were elicited; the third developed an erythematous eruption on the arms, and the fourth had anorexia, slight blueness of the lips, and rigors for a day. Compared with prontosil album the rate of toxicity reactions is much lower.

*Complications.*—Out of fifty cases ten developed complications (20 per cent.), of whom five developed epididymitis, three periurethral abscess, one haematuria, and one oedema and swelling of the prepuce. The majority of these complications began towards the end of the second week, before the administration of uleron. Although the rate of cure is higher with uleron than with prontosil album and the rate of toxicity much lower, the number of complications are against the use of delayed therapy, according to this investigation. It is possible, however, to avoid complications and to improve the cure rate by starting treatment with uleron earlier. Fifty cases are being investigated at present on the above lines. Women tolerate uleron well, and so far the results are encouraging.

## M & B 693

This is a white substance soluble in water (1 in 1,000) and sparingly soluble in the more common solvents; it is chemically known as 2-(*p*-aminobenzenesulphonamido)-pyridine. It has a faintly bitter taste and is issued in tablets each containing 0.5 gramme of actual substance of the above chemical structure. It was originally introduced for pneumococcal infections (Whitby, 1938). Lloyd and his colleagues (1938a) investigated the effect of this drug in thirty-six male out-patients and seven children as in-patients. Using a 3-gramme daily dose for adults, they observed toxic effects in ten of the thirty-six cases. In sixteen cases of gonococcal urethritis the signs and symptoms of the disease disappeared in five days. They also reported favourably on the action of this drug in cases of vulvovaginitis. In their later report (Lloyd *et al.*, 1938b) these authors achieved an 85 per cent. cure rate in 108 cases.

Bowie (1938) treated thirty male patients with M & B 693, giving each patient a total amount of 14 to 42 grammes, and is under the impression that this drug is the swiftest anti-gonococcal agent. Michie and Webster (1938) obtained rapid cure in gonorrhoeal ophthalmia. Prebble (1938) investigated sixty-five patients and cured 56.9 per cent. He treated twenty-five cases with M & B 693 alone and cured only twelve; out of forty cases treated with chemotherapy and irrigation twenty-five were cured and fifteen failed. He reported toxic reactions in 5.6 per cent. of cases treated. Batchelor and his colleagues (1938) investigated M & B 693 in seventy-nine male and twenty-three female cases. They obtained apparent cure in 91 per cent., and concluded that at present M & B 693 is the most potent anti-gonococcal agent.

### TREATMENT IN THE SALFORD CLINIC SERIES

Fifty male cases were treated in the Salford Clinic and observed for thirteen weeks after cessation of treatment. Each patient received four tablets a day (2 grammes daily) for twenty-one days—a total of 42 grammes. In addition, a daily lavage of potassium permanganate was given for the same period. Patients were seen daily during treatment; slides and urines were taken and examined and the results recorded. No other adjuvant treatment was given. The same instructions regarding diet, etc., were issued to these patients as to those undergoing prontosil album and uleron therapy. On the twenty-second day treatment was stopped, and the same standard of tests adopted as for cases under uleron and prontosil album.

*Results.*—Out of fifty male cases of acute urethritis, in 60 per cent. the posterior urethra was already affected and in 40 per cent. the disease was confined to the anterior urethra. Under the influence of M & B 693 the posterior urethra cleared up within forty-eight hours. In 28 per cent. of cases the smears were negative on the third day of treatment and in 88 per cent. on the tenth day. Eighty-six per cent. passed tests for cure in thirteen weeks, 12 per cent. relapsed, and 2 per cent. ceased to attend during the observation period. All relapsed cases were cured by other methods, and there were no complications. Out of twenty anterior cases 85 per cent. were cured and 15 per cent. relapsed, and in thirty posterior cases 86 per cent. were cured and 10 per cent. relapsed. If anything the posterior cases fared better than the anterior. The lesson learnt is that M & B 693 is a more potent anti-gonorrhoeal agent than either prontosil album or uleron, and a greater preventer of complications. The results obtained from these drugs are set out in the table.

*Toxic Effects.*—Slight signs of toxicity occurred in four patients only. They complained of slight headache, and one of them had a suspicious tinge of blueness in the lips.

*Complications.*—No complications occurred in the fifty cases observed, not even in those that relapsed.

The number of cases in this series is admittedly small, and it has taken seventeen months to complete this investigation. The cases have been under observation for a definite period in identical conditions, including the adjuvant treatment, and I am anxious to present facts and findings rather than conclusions.

### Summary

Of 200 acute gonococcal male patients, 100 were treated with prontosil album (immediate therapy), fifty with uleron (delayed), and fifty with M & B 693 (immediate therapy).

Prontosil album shortens the duration of the disease, prevents complications, and produces intolerance in 34 per cent. of cases, but the permanent-cure rate is only 46.3 per cent.

Uleron, when given by the delayed method, also shortens the disease and is better tolerated than prontosil album. It achieves a permanent-cure rate of 56 per cent., but owing to the delayed method of administration complications were met with in 20 per cent. in this series. The majority of these complications appeared towards the end of the second week—that is, before the administration of uleron.

M & B 693 is well tolerated in the dosage given. It shortens the disease, prevents complications, and produces a permanent-cure rate of 86 per cent. in the cases investigated.

M & B 693 undoubtedly is superior to prontosil album and uleron in the treatment of acute gonococcal urethritis in the male sex.

I wish to express my thanks to Messrs. Bayer Products Ltd. for the supply of uleron and literature and to Messrs. May and Baker for supplies of M & B 693 and literature. My thanks are also due to my medical, nursing, and clerical staffs for their help in this investigation.

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# CHEMOTHERAPY OF GONOCOCCAL VULVOVAGINITIS

## WITH SPECIAL REFERENCE TO M & B 693

BY

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### M & B 693

Working in co-operation with the Venereal Diseases Department, Guy's Hospital, twenty-seven cases of gonococcal vulvovaginitis have been treated with M & B 693 (2-sulphanilyl-aminopyridine) at the Children's Medical Home, Waddon, since May, 1938. The home is for girls from 3 to 14 years suffering from gonorrhoea or congenital syphilis. Most of the cases are referred by the V.D. clinics or hospitals in London, but a few come from the provincial clinics and private practitioners. The ages of the children treated ranged from 3 to 10, and their weights from 2 to 5½ stone. The duration of infection before starting this treatment varied from five days up to five weeks in fifteen acute cases, and from nine weeks up to fifteen months in twelve chronic cases. Four cases had previously received courses of sulphanilamide without benefit, a fifth a course of sulphanilamide and also uleron, and a sixth chronic case had been given M & B 693 before admission, but had relapsed.

*Tests at Beginning of Treatment*

| | |
|---|---|
| Gonococci present in urethra and vagina .. .. | 16 cases |
| ,, ,, ,, ,, and rectum | 2 ,, |
| ,, ,, vagina .. .. .. .. | 1 case |
| ,, ,, rectum .. .. .. .. | 1 ,, |
| ,, reported in tests at clinics but negative on admission to home .. .. .. | 7 cases |

The total dose of M & B 693 ranged from 2 to 8 grammes. The first six children to be treated in the home were given 0.5 gramme three times a day, and five of these cases showed symptoms of intolerance. These will be referred to later. The plan followed for the majority (fifteen) of the cases has been to give 0.25 gramme four times daily for four days, making a total course of 4 grammes. Two cases received 1 gramme daily for only three days, a third 1 gramme daily for five days, and a fourth case 1 gramme daily for eight days. A fifth case was given 1.25 grammes daily for four days, and a sixth only 0.5 gramme daily for four days. These children all took the drug well and showed no symptoms of intolerance. The half tablet was crushed, the powder placed on the tongue, and the child washed it down with water. The drug was given after the three meals, breakfast, dinner, and tea, and the last dose at 9 p.m. Precautions taken were the same as for sulphanilamide; sulphur-containing foods—that is, eggs and onions—were excluded from the diet, and no saline aperients were given. Liquid paraffin was prescribed if any aperient was required.

*Local Treatment.*—Local treatment consisted merely in swabbing the vulva with acriflavine 1 in 1,000 in glycerin, followed by a dermatol dusting powder. This was necessary only for the first few days, and was always discontinued when the course of M & B 693 was completed. In not a single case was any treatment applied to urethra, vagina, or rectum. It is of the greatest advantage to omit local paintings and irrigations, as the habit of masturbation is common in these children, and once acquired it is difficult to break.

### RESULTS

With one exception the immediate clinical result was equally good in all cases, but, with the more marked clinical signs, was more dramatic in the acute cases. The acute inflammation of the vulva, vagina, and urethra with profuse purulent discharge cleared up rapidly, and in some cases it was possible to detect signs of improvement after the second dose. In six cases there was no visible pus on the second day of treatment. The remainder were normal on the third, fourth, or fifth day of treatment. It was not practicable to make daily tests in these cases, but with two exceptions all bacteriological reports were negative for gonococci when the first test was made within two to seven days of starting the drug.

The one instance of clinical failure referred to above was an acute case with duration of infection seven days, and tests remained positive for gonococci in urethra, vagina, and rectum. This child through an error had had only 0.5 gramme daily up to a total of 2 grammes, and although a second course of 4 grammes was given she failed to respond. Prontosil album 15 grammes was administered after an interval, but the condition relapsed again nine days after the course was completed. The other case which was not negative at the first test showed "one suspicious pair" on the third day, but was negative when the next test was made on the eighth day and remained so.

#### OBSERVATION IN THE HOME

In addition to the one complete clinical and bacteriological failure there was an acute case with an excellent immediate response to a course of 4 grammes (that is, no pus from the second day and absence of gonococci when tested on the fourth day) which showed pus again after one week, and gonococci were reported in both urethral and vaginal films. This patient was given a second course of 4 grammes of M & B 693 after a fortnight's interval, and was clinically normal and negative for gonococci on the third day. Four weeks later there was a second clinical and bacteriological relapse. A third course of 4 grammes was given to this patient, and there has been no further clinical sign of infection, and six tests have been negative during a period of seven weeks' observation.

Of the remaining twenty-five cases receiving a single course of M & B 693 seventeen have been watched in the home for thirteen to twenty-eight weeks without showing signs of clinical relapse, and from ten to sixteen negative tests have been made in each case. Eight cases have been watched for three to nine weeks, and three to eleven tests made have been negative. Three cases from the former group would rank as cured according to the generally accepted standard—that is, they have been under observation for six months since completion of treatment with absence of clinical signs of infection, a series of negative films and cultures, a negative complement-fixation test for gonorrhoea, and a final set of tests after an injection of provocative vaccine.

Fourteen of these twenty-five patients have been discharged from the home, and I am indebted to the directors of the clinics to which they have returned for further reports on their condition up to date. Before their discharge they were watched for three up to twenty-eight weeks.

#### FOLLOW-UP REPORTS FROM CLINICS

Three patients were not required to attend: they had been watched for twenty-seven to twenty-eight weeks in the home and had completed full tests of cure. Two remained well and have been discharged as cured after twenty-six to twenty-eight weeks' observation. Six have remained well and are still attending, bringing the total period of observation up to twenty-two to thirty-two weeks since completion of treatment. Three required further treatment.

It is of interest to study these late failures in greater detail. The first patient had received a course of 6 grammes and had been under observation for seventeen weeks before her discharge from the home. The medical officer of the clinic reported thus on January 6, 1939, on the child's condition as she appeared when arriving at the clinic on September 27, 1938 (eleven days after leaving the home): "Purulent vaginal discharge and much pain and tenderness in left hip-joint. No gonococci found. Pus cells +++. Coliform organisms grown in culture. Made excellent and rapid progress on local application mercurochrome 10 per cent. and M & B 693 by mouth. No treatment since October 25, 1938. Tests all clear on October 28. All clinical examination clear."

The second and third cases had received courses of 4 and 6 grammes, but had been watched without relapse for only three and eight weeks respectively before leaving the home. Gonococci were reported at the clinic four weeks later. The former case was a chronic infection of one and a half years' duration which had failed to respond to a course of M & B 693 before admission to the home. There was a possibility of reinfection in the latter case, as a sister was found on examination to be positive for gonococci.

#### TOLERATION OF THE DRUG

As mentioned above, the first six cases to be treated in the home with M & B 693 were given 0.5 gramme three times daily. Five of these cases showed some signs of intolerance to the drug. One patient vomited three times on the third day, and the drug was discontinued after a total dose of 3.5 grammes. The remaining five cases completed a course of 6 grammes in four days. Three of the children vomited on the second and third days, and one also complained of headache. A fourth had a temperature of 99° on the third evening, but no clinical symptoms were reported and no signs of ascending infection were found. The fifth case showed no symptoms of intolerance. Blood counts were done on the five cases receiving courses of 6 grammes, and a low polymorphonuclear count five days after the course was completed was reported in the case which had the rise of temperature. The child's general health remained good throughout. A blood examination on May 24, 1938, showed: red cells, 4,520,000 per c.mm.; haemoglobin 76 per cent.; colour index, 0.84; white cells, 5,000 per c.mm.—polymorphs 42 per cent., eosinophils 2 per cent., basophils 1 per cent., lymphocytes 36 per cent., hyalines 19 per cent. On July 11 the blood count was: red cells, 4,120,000 per c.mm.; haemoglobin, 76 per cent.; colour index, 0.92; white cells, 5,800 per c.mm.—polymorphs 54 per cent., eosinophils 3 per cent., basophils 1 per cent., lymphocytes 30 per cent., hyalines 12 per cent.

It should be emphasized again that in all further cases in which the small divided doses of 1 gramme daily were taken the toleration to the drug was good, and not one child showed any abnormal symptom.

#### EXCRETION OF THE DRUG

The urine was tested by a diazo reaction in the first five cases and excretion was found to be rapid. The test was positive in each case while the drug was being taken, and negative twelve and twenty-four hours after completion of the course in four cases. One child showed slight excretion the day following withdrawal of the drug: it is of interest to note that she was the one reported above with the low polymorphonuclear count.

### Sulphanilamide

Prontosil album (Bayer) was first used in October, 1936, when, following the work of Dr. Rawlins in the Female Venereal Diseases Clinic, Guy's Hospital, five cases were given 0.45 gramme to 0.9 gramme daily up to a total course of 15 to 40 grammes. With these small individual doses the clinical response was not satisfactory, and gonococci were still present in three cases on completion of treatment. There were no symptoms of intolerance in this short series. These cases are omitted for purposes of comparison with M & B 693.

Trial was next made in August, 1937, of larger daily doses, and fifteen cases were given courses of prontosil album 1.5 grammes or 2 grammes daily in divided doses according to body weight, up to a total of 16.5 grammes to 42 grammes. Four cases in this series showed toxic symptoms which necessitated omission of the drug. They were as follows: two cases had rashes resembling rubella after 16.5 and 20 grammes; one case showed cyanosis after 16.5 grammes; and one case had abdominal pain and slight pyrexia after

17 grammes. A fifth case had severe headache and nausea, but the drug was not omitted and the symptoms cleared.

As a result of the intolerance to the drug, and finding that those children who had received the shorter courses did not show signs of relapse, it has been the practice in the home since November, 1937, to give prontosil album for ten days only. Courses of 0.5 gramme three times daily, to a total of 15 grammes, are given to children under 4 stone in weight, and 0.5 gramme four times daily, total 20 grammes, to children over 4 stone. Sixteen cases have received treatment according to this plan, and there has been only one case of intolerance to the drug. This child showed a heavy morbilliform eruption twenty-four hours after completing a 15-gramme course. The rash faded the following day, but an urticarial eruption developed five days later. This was transitory, fading in a few hours.

*Local Treatment.*—In addition to the swabbing of the vulva, daily paintings were given to the urethra, vagina, and rectum in most of the cases receiving prontosil album. This was continued for the duration of drug treatment. A vaginal irrigation was also sometimes necessary for the first few days when the discharge was very profuse.

### RESULTS

The immediate results of treatment in this series of thirty-one cases with duration of infection from two days to three and a half years were most satisfactory clinically and bacteriologically in twenty-six cases. Fifteen cases remained under observation in the home for not less than six months before they were discharged, and the remaining eleven cases were watched for eight up to twenty-four weeks. There were five failures. Four cases with duration of infection two, seven, seven, and thirty-five days (the last the failed case of M & B 693) remained positive for gonococci. The fifth case showed a purulent vaginal discharge, but gonococci were not reported in films or cultures.

### FOLLOW-UP REPORTS FROM CLINICS

Of the fifteen cases completing tests of cure during a minimum of six months' observation in the home, reports have been received on nine cases. The remaining six cases were not required to reattend the clinics by the medical officers. Of the nine cases of which reports have been received, six have been discharged without relapse after a total period of observation of nine to twelve months since completion of treatment; two have remained well and are still attending the clinics, bringing the total period of observation up to ten and thirteen months; and one showed gonococci in urethra and vagina. This last case was the one with a duration of infection of three and a half years. It was known that there was infection in the family.

Three cases remain in the home, having been under observation for eight, sixteen, and twenty-four weeks respectively without relapse.

On the eight cases who were discharged from the home after a period of eight to thirteen weeks' observation the following reports have been received: three cases have been discharged without relapse after a total period of observation of twenty-eight to thirty-five weeks; one has remained well and is still attending after thirteen months' observation; one has remained well and after six months' observation has been transferred to another clinic; and two showed "suspicious pairs" in vaginal films after their return to the clinics and were given further courses of sulphanilamide. One case defaulted from the clinic: she had been under observation for eight weeks in the home before discharge.

### Uleron

A trial supply of uleron was made available in the home by Dr. Oddie of Bayer Products Ltd., and six cases were treated by the "Stoss" method as advised. Uleron 0.5 gramme three times daily for four days, with a total dose of 6 grammes, was given to children under 4 stone in weight, and 0.5 gramme four times daily for four days, with a total dose of 8 grammes, to children over 4 stone.

Three cases responded well, although not so rapidly as those receiving M & B 693 or prontosil album. The first case was given two "Stosses" of 8 grammes each with an interval of three days, the second case two "Stosses" of 6 grammes each with an interval of two weeks, and the third only one "Stoss" of 6 grammes. Before her admission this last case had received a course of proseptasine, 18.25 grammes, without benefit. Gonococci were present in the urethra and vagina when the course of uleron was given. A test taken on the third day of treatment was negative. These three cases remained satisfactory clinically and bacteriologically and completed full tests of cure until their discharge from the home after twenty-six to twenty-seven weeks' observation.

### FOLLOW-UP REPORTS

One patient has been watched at the clinic up to a total of forty-four weeks as there was known to be infection in the parents. She has remained well. The other two children have not been required to attend the clinics. It will be noticed that the length of time these cases are watched after they have been discharged from the home varies in different clinics. It depends, of course, to a certain extent on the presence or absence of infection in other members of the family, but there is no uniform practice as to duration of observation before completion of tests of cure in children. The remaining three cases had failed on sulphanilamide therapy, and uleron was given also without benefit. No symptoms of intolerance to the drug were shown in this small series of six cases.

### Comparative Results with the Three Drugs

A comparison of results of treatment is shown in the following table:

TABLE I

| | M & B 693 | Prontosil Album | Uleron | Total |
|---|---|---|---|---|
| Number of cases treated .. | 27 | 31 | 6 | 64 |
| Immediate failures .. .. | 2 (7.4%) | 5 (16.1%) | 3 (50%) | 10 (15.6%) |
| Tests of cure completed in home or clinic: period of observation 6–12 months | 5 (18.5%) | 15 (48.3%) | 2 (33.3%) | 22 (34.3%) |
| Condition satisfactory,* still under observation at clinic | 6 (22.2%) (22–32 weeks' observation) | 3 (9.7%) (10–13 months' observation) | 1 (16.6%) (44 weeks' observation) | 10 (15.6%) |
| Condition satisfactory* for 6 months, transferred to another clinic | — | 1 (3.2%) | — | 1 (1.6%) |
| Condition relapsed, still under observation at clinic | 3 (11.1%) | 3 (9.7%) | — | 6 (9.4%) |
| Defaulted from clinic .. .. | — | 1 (3.2%) | — | 1 (1.6%) |
| Condition satisfactory,* still remain in home | 11 (40.7%) (3–25 weeks' observation) | 3 (9.7%) (8–24 weeks' observation) | — | 14 (21.8%) |

* No gonococci, no discharge.

### Comparison between Sulphonamide Therapy and Other Methods

It is of interest to compare, from the figures given in Table II, the present duration and results of sulphonamide therapy with those when other methods were employed in earlier years. The general treatment in the home, covering local hygiene, fresh air with regulated exercise and play, occupation in school, and diet containing plenty of fresh food—that is, milk, butter, and fruit—has remained the same throughout. It has been possible, however, to cut down to twenty-four hours the initial period of rest for the acute cases receiving M & B 693.

TABLE II

| No. of Cases | Treatment | Duration of Treatment | Good Results | Relapses or No Response to Treatment |
|---|---|---|---|---|
| 156 | Local painting | 17 weeks average | 103 (65.9%) | 53 (33.9%) |
| 36 | Oestrin | 3–12 weeks | 14 (38.9%) | 22 (61.1%) |
| 31 | Prontosil album | 10–21 days | 23 (74.1%) | 8 (25.8%) |
| 27 | M & B 693 | 4 days | 22 (81.4%) | 5 (18.5%) |

#### LOCAL PAINTING

The applications used were chiefly mercurochrome 5 to 25 per cent. in glycerin, protargol 10 per cent. in glycerin, neoreargon or acriflavine 1 in 500 or 1 in 1,000. For 156 cases treated from 1931 to 1934 the average duration of treatment was seventeen weeks. Fifty-three cases relapsed while still in the home after suspension of treatment for varying periods, giving a relapse rate of 34 per cent.

#### OESTRIN THERAPY

During 1935 eleven cases were treated with oestroform (British Drug Houses Ltd.). Daily injections of 200 to 900 units were given up to a total of 5,400 to 43,900 international units during a period of three to ten weeks. The following results were obtained: good response, three cases; immediate failures, two cases; early relapses (seven to sixteen days), four cases; late relapses, two cases.

In 1935 and 1936 twenty-five cases were treated with menformon (Organon Laboratories). Daily doses of 1,000 2,000, or 3,000 units were given up to a total of 35,000 to 118,000 international units during a period of five to twelve weeks, with these results: good response, eleven cases; immediate failures, two cases; early relapses (three to five weeks), ten cases; late relapses, two cases.

### Conclusions

The introduction of sulphonamide compounds marks the greatest advance in the treatment of gonococcal vulvovaginitis.

The duration of treatment has been cut down to only four days for cases receiving courses of M & B 693 and to ten days for cases receiving courses of prontosil album. Perhaps the chief advantage of M & B 693 is that there is no necessity whatever for local treatment apart from merely swabbing the vulva for the first two or three days.

It is possible to judge from the outset if the case will respond to the drug treatment, as improvement is apparent within a few hours in some cases treated with M & B 693, and always within two or three days for both M & B 693 and sulphanilamide.

Discounting the total of ten immediate failures with the three drugs used, there were no relapses in fifty-four cases while the children remained in the home. It is noteworthy, too, that in no case in which the rectal tests were negative at the beginning of treatment did later infection occur in the rectum. This was a difficulty with the old methods of local and oestrin treatment, when the purulent vaginal discharge remained longer, thus spreading back to the anus and giving rise to infection of the rectum in some cases. From this site reinfection of the vagina followed.

One of the cases treated with prontosil album showed a wart, otherwise no complications developed in this series of sixty-four cases. The incidence of complications is not high in gonococcal vulvovaginitis, as shown in the following table of complications occurring in 467 cases treated at the Children's Medical Home from 1928 to 1936:

| | | |
|---|---|---|
| Proctitis | 55 cases | (11.8%) |
| Cervicitis | 11 „ | (2.3%) |
| Endometritis and salpingitis | 4 „ | (0.8%) |
| Warts | 4 „ | (0.8%) |
| Purulent conjunctivitis (no gonococci found) | 4 „ | (0.8%) |
| Tenosynovitis | 2 „ | (0.4%) |
| Arthritis | 1 case | (0.2%) |

Urethritis is not counted as a complication, because infection of the urethra is invariably present in gonococcal cases, and the term "vulvovaginitis" does not cover the complete clinical picture.

### Summary

Twenty-seven cases of gonococcal vulvovaginitis treated with M & B 693 are reported upon, and also thirty-one cases treated with prontosil album and six cases treated with uleron. Total, sixty-four cases.

Tolerance to these drugs in children is shown to be good when suitable doses are employed for short periods.

The results of treatment were: remained well for five to thirteen months, thirty-four cases; remained well for three to nineteen weeks, fourteen cases; immediate failures, ten cases; late relapses, six cases.

The advantages of M & B 693 over sulphanilamide are shown in the shorter duration of drug treatment and omission of local treatment to the urethra, vagina, and rectum.

Comparison is made of sulphonamide treatment with the methods of local treatment and oestrin therapy as employed in the home in earlier years.

I am pleased to make acknowledgments to Dr. V. E. Lloyd, Director, V.D. Department, Guy's Hospital, for helpful criticism and also for the supply of M & B 693 and for carrying out the urinary diazo tests; to Dr. Morna Rawlins for her interest and advice; and to Dr. F. A. Knott for the blood counts. Examination of all films and cultures and serological tests have been carried out in the V.D Laboratory, St. Thomas's Hospital, and my thanks are due to Dr. T. E. Osmond.

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The annual *Proceedings of the Medical Officers of Schools Association* includes full reports of Sir Kaye Le Fleming's address on the Education of the Body in Public, Secondary, and Preparatory Schools; the late Major Stewart Blackmore's paper on Air Raid Precautions in Public Schools; Dr. J. Lambert's presidential address on the Application of the Recent Epidemiological Advances in Infectious Diseases to Epidemics in Schools; and Dr. Reginald Miller's paper on Epidemics of Vomiting and Diarrhoea in Children of School Age. The headquarters of the Society are at 11, Chandos Street, Cavendish Square, W.1.

# WEIL'S DISEASE IN GLASGOW SEWER WORKERS

BY

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The most striking feature about the literature of Weil's disease is the lack of reference to infection in sewer workers. Environmental factors appear highly favourable, yet with the exception of isolated cases such as recorded by Capellini and Berzi (1932) and Knack (1933) no evidence of such infection was produced till Fairley (1934) described a typical case of Weil's disease in a London sewer worker, proved by serological tests and by isolation of the organism from inoculated guinea-pigs to be caused by *Leptospira icterohaemorrhagiae*. Seven other cases recorded by the same author gave histories of severe illnesses associated with jaundice, and their sera still showed the presence of antibodies to *L. icterohaemorrhagiae*. One further case with a typical history and post-mortem findings was discussed. The author pointed out that he was dealing with a limited number of workers (forty-five), and though only those with suggestive histories were investigated the evidence indicated that leptospiral infection was a very grave occupational risk in sewer-men. Alston (1935) described three further cases occurring in the interval since Fairley's paper, and mentioned another two. In a review of the epidemiology of Weil's disease Alston and Brown (1937) pointed out that nineteen cases with five deaths had occurred in London sewer workers between July, 1933, and February, 1937. No cases among similar workers in other parts of the country were reported, although the above figures suggested that leptospiral infection was likely to prove a grave occupational risk. The occurrence of Weil's disease in Glasgow sewer workers was first appreciated with the admission to the Royal Infirmary of the following case.

## Case History

A man aged 34 was taken ill on September 22, 1937, with severe pains in the leg muscles and a slight temperature. Symptoms rapidly became more severe and were accompanied by a painful backache. Fever and constitutional upset were present, and at first a diagnosis of influenza was made. Anorexia was noted, with nausea and vomiting. Jaundice was first seen on September 28. Epistaxis occurred on the 27th and more severely on October 1. When admitted to hospital on October 2 the patient was collapsed (temperature 97° F.), and he died in a few hours.

### POST-MORTEM REPORT

The body is that of a well-nourished young man. Severe jaundice is present. The skin shows multiple petechiae with a herpes-like eruption round the mouth.

*Pericardium.*—A few petechiae appear on both visceral and parietal surfaces.

*Heart.*—(360 grammes.) There is evidence of an old rheumatic endocarditis on both the mitral and the aortic valves, with adhesion of the edges of the aortic cusps. Recent vegetations are scattered over both valves. The heart is otherwise normal.

*Pleurae.*—Many adhesions occur round the base of the right lung.

*Lungs.*—(Right, 1,050 grammes; left, 1,000 grammes.) Both organs show very marked oedema, with an early hypostatic pneumonia.

*Trachea and Oesophagus.*—Normal.

*Peritoneum.*—Normal.

*Stomach and Intestines.*—The stomach shows multiple haemorrhagic erosions, and contains blood-stained material. The intestine is dilated, and contains very dark changed blood.

*Liver.*—(2,000 grammes.) The organ is large. The capsule is not wrinkled. On section a background of liver tissue shows considerable fatty change, but on top of this there appears to be a diffuse necrosis with pronounced bile staining. No bile is present in the gall-bladder or the bile passages.

*Spleen.*—(105 grammes.) Small and normal in appearance.

*Kidneys.*—(Right, 200 grammes; left, 250 grammes.) Both organs are large and soft, and on section give the appearance of fatty degeneration with pronounced bile staining.

*Brain.*—(1,600 grammes.) The organ is very oedematous and soft, and on section reveals multiple scattered petechiae. The cerebrospinal fluid shows bile staining.

### BACTERIOLOGY

Blood specimen was taken on October 2: Schüffner's sero-reaction was positive to *L. icterohaemorrhagiae* 1 in 1,000 and negative to *L. canicola*. Levaditi-stained preparations of the liver obtained at necropsy on October 4 showed much granular debris suggestive of phagocytosed and broken-down spirochaetes. One or two identifiable leptospirae were, however, discovered after prolonged search. The organism was not isolated, probably because the blood was taken on Saturday evening and was not received till Monday. Blood clot and liver were inoculated into guinea-pigs on that day, but no evidence of leptospiral infection was found, nor did reinoculation of their tissues produce any disease. The sero-reaction of all animals remained consistently negative to *L. icterohaemorrhagiae*.

## Investigation of Deaths of Sewer Workers

This evidence that Weil's disease was occurring in the Glasgow area stimulated me to investigate the incidence of infection, and through the courtesy of the public health authorities details were obtained of deaths among sewer workers for the past three years. Five men other than the case reported above had died, and of these two had suspicious histories.

A. B., aged 60, died on September 19, 1935, death being certified as due to acute yellow atrophy of the liver. This man was ill for about a week. At first the illness was indefinite and did not seem severe, but after a few days jaundice appeared, the patient rapidly became acutely ill, and he died. The physician in charge agreed that this could easily have been a case of Weil's disease.

C. D., aged 51, died on September 20, 1937, from an affection certified as acute cholecystitis. The illness in this case was very similar to the above. Jaundice developed about the fourth or fifth day. Severe haematemesis occurred before death after about ten days' illness. Here again the attendant physician agreed that a diagnosis of Weil's disease would have accounted for the symptoms.

One other sewer worker died on October 12, 1935, of a rather chronic lobar pneumonia with a terminal acute phase. At that time he gave a history of "sewer-gas poisoning" four years earlier. As will be seen later, this diagnosis almost certainly indicated Weil's disease.

## Investigation of Non-fatal Cases

The evidence that three men had died from acute illnesses suggestive of, or proved to be, Weil's disease indicated that leptospirosis was likely to be as great a problem in Glasgow as it was in London. Again through the good offices of the public health authorities it was arranged that all the Glasgow sewer workers should be tested.

*Methods.*—Blood was obtained by venepuncture, and the serum was tested for the presence of antibodies to

*L. icterohaemorrhagiae* by Schüffner's method as described by Davidson *et al.* (1934). Living cultures of leptospira (Schüffner's non-virulent Wijnberg strain) and of *L. canicola* (both obtained from Dr. J. Smith, Aberdeen) were used as antigens, and the titre of a positive serum was the highest dilution showing lysis of leptospira. The specificity of this method has been amply proved (Schüffner, 1934; Smith and Davidson, 1936; Stuart, 1938), and non-specific antibodies even at a dilution as low as 1 in 10 have never been found.

Thirty-five men were examined out of a total of thirty-six engaged in this branch of public service in Glasgow, and six were found to be positive (see Table). In five cases

*Particulars of Six Cases in which Glasgow Sewer Workers gave a Positive Sero-reaction*

| Case No. | Age (Years) | Nature of Employment | History of Illness | Schüffner Sero-reaction to L. icterohaemorrhagiae |
|---|---|---|---|---|
| 1 | 46 | 12 years sewer-man | "Influenza," 1935, two months' duration; marked pains in legs. Jaundice + | Positive 1 : 30 |
| 2 | 46 | 13½ years sewer-man; 1½ years waste-man | "Sewer-gas poisoning," 1932, seven weeks' duration; debility. Jaundice + | „ 1 : 300 |
| 3 | 57 | 12 years winchman; 16 years sewer-man | "Influenza," 1931, five weeks' duration; fever and pains in limbs. No jaundice | „ 1 : 10 |
| 4 | 57 | 35 years sewer-man | Severe illness, 1927, two months' duration; high fever; haematuria. Jaundice (?) | „ 1 : 300 |
| 5 | 43 | 12 years sewer-man; 4 years foreman | "Influenza," 1926, two months in bed; prolonged convalescence. Jaundice + | „ 1 : 100 |
| 6 | 63 | 30 years sewer-man | "Sewer-gas poisoning," 1910, 10 weeks' duration; headache, vomiting, and fever began. No further recollection | „ 1 : 100 |

the serum titre leaves no doubt about the diagnosis. Case 3 is more dubious, but the very suggestive history is, I feel, strongly in favour of a definite leptospiral infection.

### Isolation of Leptospirae from Sewer Material

Buchanan (1927) first demonstrated the possibility of isolating virulent leptospirae from non-living material by inoculating roof-slime of an infected mine into guinea-pigs. Davidson *et al.* (1934), following Appleman's technique, isolated leptospirae from floor washings of fish-cleaning establishments. Alston succeeded in isolating *L. icterohaemorrhagiae* from two out of thirty specimens of slime and mud from sewers. Young guinea-pigs, 300 grammes in weight, were used, and a marked difference in the susceptibility of such animals was recorded. Inoculation was subcutaneous or by scarification. The method by which leptospirae were recovered was not recorded, but Alston concluded that subcutaneous inoculation or scarification was likely to be better than intraperitoneal injection.

In the present investigation young guinea-pigs about 6 weeks old were used, rectal temperatures were taken daily, and blood was cultured from heart puncture whenever a rise of temperature seemed significant. If the animals remained healthy they were killed, usually between the second and third weeks, and their kidneys inoculated into further animals. Sera were tested by Schüffner's method for the presence of antibodies to *L. icterohaemorrhagiae* whenever blood was withdrawn and after the animals were killed. Twenty-eight specimens of slime and silt from the floors of sewers were inoculated by various methods. Twenty were rubbed into the shaved and scarified skin of the abdomen without success; six were inoculated by immersing the animal (Appleman's technique, as practised by Davidson *et al.*) and two by intraperitoneal inoculation, but leptospirae were not recovered. Finally ten specimens were injected subcutaneously into the groin. Some degree of local sepsis was encountered in using this technique, and temperature records were valueless as a guide to leptospiral infection, but leptospirae were recovered from one animal by heart puncture on the seventh day after inoculation. The animal, when killed five days later, had typical Weil's disease. None of the other animals inoculated by this or other methods showed any evidence of leptospirosis, nor did they develop serum antibodies to *L. icterohaemorrhagiae*, which might have suggested subclinical infection. The specimen from which leptospirae were recovered was inoculated by one method only, and therefore, although I believe subcutaneous inoculation to be best, I can produce no definite evidence on the matter.

### Isolation of Leptospirae from Sewer Rats

Only two rats were obtained direct from the sewers. Both had positive sero-reactions (1 in 30) to *L. icterohaemorrhagiae*, and from one of them leptospirae were recovered in pure culture. Guinea-pigs were not inoculated. It was, of course, impossible to determine the incidence of leptospiral infection from such small figures, but the suggestion that it was high was borne out by similar findings in rats from a local abattoir where communication with the sewers was easy. Here, out of thirteen adult rats examined, eleven had a positive sero-reaction to *L. icterohaemorrhagiae*, and in eight of these leptospirae were detected by kidney histology, kidney culture, or guinea-pig inoculation.

### Discussion

In the past three years three men appear to have died from Weil's disease and a fourth has been ill but has recovered. In the group of present workers six out of a total of thirty-six show evidence of past infection. The incidence of infection is less than the 24.2 per cent. recorded by Smith and Davidson in fishworkers, but the death rate appears higher than the 10 per cent. suggested by Schüffner from his wide Continental experience. It has not been possible to obtain records of deaths earlier than the above period, and the apparent severity of infection in local sewer workers may be only a chance observation. In any case, my findings fully support the evidence of Fairley and of Alston *et al.* that leptospiral infection is very definitely an occupational risk in sewer workers. All factors are favourable to the development of human leptospirosis. Sewer rats are heavily infected, and the excreted leptospirae can remain alive in sewer slime. The reaction of such material is probably of paramount importance in determining leptospiral viability. According to Walch-Sorgdrager *et al.* (1938) the ideal *p*H for the maintenance of living leptospirae is 7.3 to 7.7, but they will tolerate a slight acidity of *p*H 6.76. The specimens of slime, water, and mud obtained from Glasgow sewers had reactions from *p*H 6.9 to *p*H 7.4, and Alston *et al.* state that specimens of mud from London sewers were very nearly alkaline. Workers are liable to get cuts and scratches in the course of their duties; gloves cannot be worn with convenience, and in spite of protective clothing sewer material is apt to soak clothes and to splash into mouths and eyes.

It has been suggested that infections seem to occur especially when men are working in overflow sewers. Such sewers are particularly haunted by rats, and are coated with stagnant slime except when washed out by abundant rainfall. The possible influence of rainfall on the incidence of human leptospiral infection has been investigated, but no definite evidence has been obtained. No infection is likely when men are working in fast-running sewers or where chemical effluents are present. Rats, indeed, are uncommon in such places. No distinct seasonal incidence is apparent, although the three fatal cases occurred in September; other cases have been found in January, May, July, and December.

The lack of clinical recognition of these cases is not surprising. The diagnosis of Weil's disease is chiefly dependent on the knowledge that such infection is possible and, certainly in the milder non-jaundice cases, is entirely dependent on the laboratory. With the exception of the fairly recent work in London, evidence that sewer workers are liable to infection has been singularly lacking, but with the recognition of such a possibility one can expect an increasingly accurate diagnosis of the condition and a corresponding saving of life through early serum therapy. Probably it will be found that Weil's disease is only an occupational risk of sewer workers in large cities where the men actually enter the ducts. In smaller towns, where work is mainly on the surface, the risk of infection must be infinitely less.

Laboratory diagnosis in the first week of the disease is difficult, but should always be attempted, since serum therapy is so valuable at this stage. Direct examination of blood plasma for living leptospirae will occasionally be successful, and the inoculation of suitable guinea-pigs will reveal leptospirae in the peritoneal fluid after three or four days. After the first week, examination of the serum by Schüffner's method gives a ready clue to the condition, and a rising titre will exclude a positive result from past infection. Further, a present infection usually gives much higher titres. As an indication of previous infection a positive sero-reaction is very valuable. In the present series a positive result has been obtained twenty-seven years after an infection suggestive of Weil's disease. It is possible, however, that a positive reaction may occasionally not persist in milder cases. No evidence has yet been produced on this point, but it is recognized that the sero-reaction during infection is not necessarily correlated with the severity of the illness.

Prophylaxis in sewer workers is difficult. In Glasgow, men are warned about the risks of having exposed cuts or scratches; protective clothing is supplied and facilities for washing and disinfection are available. It is unlikely that this will be of much avail, since invasion of the body through the eyes, mouth, and abrasions can be so rapid. Adequate vaccination with an efficient antigen will probably be the ultimate solution. This is highly successful in protecting experimental animals, but is still largely experimental in man.

### Summary

In the past three years three sewer workers in Glasgow have died from presumed Weil's disease; one case has been bacteriologically proved.

Evidence of past infection has been found in six out of a total of thirty-six workers.

Virulent leptospirae have been isolated from sewer rats and from sewer slime.

Vaccination is suggested as the only prophylactic measure likely to be efficient.

I wish to thank Dr. D. Smith, Glasgow Royal Infirmary, for permission to record one case, and Dr. A. Lyall for post-mortem details; Mr. Thomas Somers, city engineer, for arranging facilities for the investigation; Dr. T. McGowan of the public health department for much information; and Mr. Charles McDonald, foreman, for his intelligent interest and co-operation.

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## TREATMENT OF BRUCELLA MELITENSIS INFECTION WITH PRONTOSIL*

BY

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During the last ten months a number of reports have appeared in English and foreign journals claiming an almost specific effect for prontosil and other sulphonamides in undulant fever. As the treatment of this infection is one of our major therapeutic problems in Malta it was decided to investigate this line more extensively, and under conditions where a rigid scientific control could be maintained.

This note is based on twenty-five cases treated at the Central Hospital, Malta, between August 15 and September 22, 1938. Of these, four were men and twenty-one were women. The ages varied between 14 and 45 years. The majority were seen in the earlier stages, within two or three weeks of the onset of the disease, but in some the infection had been present for a longer period. The series included sixteen cases of the ordinary febrile undulating type; four cases of the "septicaemic" or "malignant" type; and six cases of the mild intermittent type, which is similar to abortus fever as it occurs in England and the U.S.A. The series was fairly representative of undulant fever as it occurs in Malta. The diagnosis was confirmed in every case by an agglutination reaction of over 1 in 100, and in twelve instances by a positive blood culture. As *Brucella abortus* has not been met with in Malta, all the cases may be taken to have been due to the *Br. melitensis*.

The preparation used was prontosil rubrum in eighteen cases, prontosil album in four, and streptocide in three. The average dose was 9 tablets of 0.5 gramme daily for seven days. In five cases treatment had to be stopped on account of intolerance, and in another four it was prolonged for twelve days in an attempt to obtain a decisive result.

### Results

In nineteen cases there was no apparent effect on the temperature or on the course of the disease. If the drug was given during the decline of a pyrexial wave the temperature continued to fall *gradually*, to rise again in

* Read at a meeting of the Malta Branch of the British Medical Association, October 24, 1938.

a few days in spite of the continuation of the prontosil. If treatment coincided with the ascent the temperature continued to rise. In the "septicaemic" cases the effect appeared to be definitely harmful. Two of these patients died, although the fatal issue cannot be attributed to the prontosil, and would probably have occurred anyhow. In the other two the toxaemia was aggravated, and the drug had to be stopped on account of cyanosis. In five cases a blood culture was taken on the seventh day. The method used was to inoculate 3 c.cm. of blood into 5 c.cm. of citrated tryptose broth, to incubate for three days, and to plate on liver agar. In four instances *Br. melitensis* was obtained on the first subculture; in the fifth case the culture was contaminated.

In six cases the temperature came down and stayed down following the treatment. These cases deserve individual consideration, as they show how careful one must be in claiming "cures" in undulant fever.

*Case A 1.*—A woman aged 22—an early case. Temperature came down gradually in ten days. Patient felt well and insisted on being discharged. She was admitted fifteen days later with a severe relapse, and in spite of our efforts she died on the tenth day.

*Case A 2.*—A woman aged 30. Onset three weeks previously. Temperature came down gradually after twelve days' treatment. She was sent to a convalescent home, where her temperature showed occasional rises. She had two more waves at home, and is still suffering from rheumatism.

*Case A 3.*—A man aged 36. Temperature came down gradually after eight weeks. Reports occasional rises and complains of rheumatism, and has not returned to work up to date.

*Case A 4.*—A woman aged 42—a chronic case. She had been treated with ordinary vaccines and with brucellin. Temperature came down in the seventeenth week after prontosil.

*Case A 5.*—Woman aged 28; fever of four weeks' duration. Temperature came down gradually in ten days, after only two days' treatment. Treatment was obviously insufficient in this case, and recovery must have been a coincidence.

*Case A 6.*—A girl aged 16. Fever for three weeks—a very mild case. She could not be traced, as she had left the island.

Of the six apparently successful cases two relapsed, and one of these patients died. One case was very mild, and in another only a very small dose had been given. The other two recovered in the eighth and the seventeenth week respectively.

## Discussion

In considering these results it must be realized that in spite of its reputation of "chronicity" undulant fever is essentially a self-limited disease, and that its tendency is towards spontaneous recovery. It belongs to the category of pneumonia and typhoid fever, and not to that of tuberculosis and syphilis. Again, in spite of the very occasional occurrence of a case lasting a year or more, the average duration of undulant fever in Malta is six to nine weeks, and in over 25 per cent. of cases the duration is less than six weeks. From the sixth week onward, therefore, natural recovery is to be expected, and it cannot be attributed to any particular line of treatment unless it is accompanied by some unusual and striking feature, such as a drop in temperature in two or at most three days. This is constant with salicylates in rheumatic fever and with quinine in malaria. A sudden and dramatic drop in temperature also occurs with prontosil itself in erysipelas and certain other streptococcal infections, but it was conspicuously absent in our cases and in most of the cases reported hitherto.

Treatment with prontosil was not popular with the patients or the nursing staff. The elimination of eggs from the dietary was a serious inconvenience. In most of the cases the patients felt and looked more ill while taking the drug. They complained of lassitude and of a "swimmy" feeling in the head. Headache, pain in the epigastrium, occasional vomiting, and pains in the legs were fairly common. On one occasion there was intractable vomiting, and the drug had to be stopped after two days. Cyanosis with intense dyspnoea developed in two cases of septicaemic undulant fever. The most alarming symptoms, however, were caused by haemolytic anaemia. This occurred in three cases. In one case the blood count dropped to 1,000,000 reds and the haemoglobin to 25 per cent. on the fifth day of the treatment. The patient was desperately ill, but eventually recovered. It was this case which made us abandon our original plan to treat 100 consecutive cases.

There was no appreciable effect on the agglutination titre or on the white corpuscles. We had the impression, however, that the prontosil interfered in some way with the development of natural immunity. As already stated, one patient relapsed and died—a rather unusual feature in a relapse; and a number of other cases seemed to have been unduly prolonged and to run a more acute course after prontosil. In fact, of the twenty-five cases treated, twelve are still running a temperature; while of a similar series of twenty treated symptomatically at the same time, all but two have recovered. Comparison, however, when such small numbers are concerned is not fair, as it might well have happened that the cases treated with prontosil were *ab initio* more severe.

It may be argued that hospital cases are more severe than the ordinary case seen in private practice, and it was on private cases mostly that the published reports were based. But it is exactly in these cases of more or less severe infection that a specific treatment should be effective. As a rule the milder cases recover spontaneously in a relatively short time.

The ideal treatment in undulant fever should: (1) reduce the mortality in malignant cases; (2) cut short the pyrexial waves; (3) prevent relapses; and (4) prevent rheumatism. In our experience prontosil has not fulfilled any of these desiderata. Again, in a disease where the mortality—apart from malignant cases—is very low, treatment should be harmless and should not expose the patient to greater risks than those of the disease it is intended to cure. In spite of all precautions there is a definite element of danger in sulphonamide therapy, especially if the dose has to be pushed; and, considering the very problematic results, its use in *Br. melitensis* infection does not seem to be justified.

There is no doubt that prontosil is a most valuable drug—perhaps the most valuable since the discovery of salvarsan; but its advocacy in conditions where it is not indicated, or at least in conditions where its proper use is not yet understood, can only bring discredit upon it and eventually limit its sphere of real usefulness.

## Conclusion

Twenty-five cases of undulant fever due to *Br. melitensis* infection were treated with 4.5 grammes of prontosil daily for seven days. In no case could recovery be attributed unequivocally to this line of treatment.

My thanks are due to the Chief Government Medical Officer, Malta, for permission to publish these cases, and to my two house-physicians, Dr. C. Podesta and Dr. J. D'Amato, for their help during the investigation.

# Clinical Memoranda

## Intussusception in an Adult due to a Lipoma

Intussusception in the adult is perhaps uncommon enough for the following case to be of some interest.

### CASE REPORT

On March 11, 1938, a carter aged 33 was admitted to hospital complaining of attacks of colicky abdominal pain, which had been present for two weeks. Five weeks previously he had had an attack of influenza that had kept him in bed for two weeks; he then returned to work for two days, but had to leave off because of the onset of the present attack. The pain began quite suddenly and had recurred almost daily; it was severe enough to keep him in bed and to interfere with his sleep. For the first two days of the attack he had vomited considerable quantities of bile-stained fluid, but not for the past ten days. His bowels had been open every day, and for two days before admission he had passed five or six loose stools. He had not noticed any blood. His appetite had been quite good; he had taken food normally and he did not think he had lost weight. There was no history of previous diseases of any importance.

On examination he was a healthy-looking man. His temperature was 98° and pulse 100. His tongue was dry and slightly furred. His abdomen showed some distension in the epigastrium, but on palpation was quite soft, and there was nothing definitely abnormal to be felt. On one occasion it was thought that some coils of peristalsis were observed. There was no free fluid, and rectal examination was negative. An enema produced a moderate faecal result, but no flatus at all. A diagnosis of subacute intestinal obstruction was made.

*Operation.*—On March 12, 1938, under spinal percaine anaesthesia, the abdomen was opened through a right paramedian incision. The terminal coils of the ileum and the lower end of the caecum were slightly distended, but did not appear otherwise abnormal, and the appendix was also normal. A bluish mass was discovered in the right hypochondrium, which proved to be an intussusception of the ascending colon into the beginning of the transverse colon. Reduction was impossible because, on attempting it, the coats of the intestine split in all directions. The last six inches of the ileum and the right half of the colon were therefore resected and the operation completed by Mikulicz's method, the ends of the ileum and transverse colon being gun-barrelled and brought out of the upper end of the wound.

The patient recovered very well from the operation, and on April 25 an enterotome was applied to the spur. This was not completely successful in closing the fistula, and on May 11 a further operation was undertaken to effect the closure. On June 17 the patient was discharged with the wound soundly healed.

Examination of the specimen showed that the intussusception had been caused by a tumour the size of a hen's egg, which was growing from the postero-lateral wall of the upper end of the caecum. On cutting into the tumour it was found to be a submucous lipoma, which was confirmed by microscopical section.

Mikulicz's operation appears to be the ideal method of dealing with adult intussusception, as was suggested by E. N. MacDermott (1935) when he described five cases due to tumours.

I am very grateful to Mr. E. E. Hughes for permission to publish this case.

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Surgeon, Royal Surrey County Hospital, Guildford; late Resident Surgical Officer, Ancoats Hospital, Manchester.

### REFERENCE

MacDermott, E. N. (1935). *British Medical Journal*, **1**, 1214.

# Reviews

## MANIPULATION OF JOINTS

*The Science and Art of Joint Manipulation.* Volume I. *The Extremities.* By James Mennell, M.A., M.D., B.C. (Pp. 233; 284 figures. 18s.) London: J. and A. Churchill. 1939.

Although this book has a lengthy preface it lacks a dedication: which is a pity, for it surely ought to be inscribed to the teachers of anatomy in medical schools. Dr. James Mennell has studied the shape and form of articular surfaces, and from them has deduced the movements that must of necessity occur at those joints. Some of these movements are under voluntary control, and are well recognized; others are not under voluntary control, and have hitherto been neglected by anatomists, who will in future have an additional bulk of minutiae with which to harass the medical student. According to Dr. Mennell this additional anatomical knowledge will have to be assimilated by any medical practitioner who desires to become proficient in the new physicotherapy of joint manipulation.

Dr. Mennell's contention is that bones may become shifted slightly on one another, so that the joint surfaces are no longer congruous. He describes this as locking or seizing up of the joint (although the bone-setter's "bone out of place" seems just as accurate a description, and might therefore well be retained). Once this has occurred, free painless movement of the joint is impossible until the bones have been replaced by manipulation, because the movement necessary for replacement is not under voluntary control.

Half of the book is devoted to anatomy and half to the technique of performing these involuntary movements by manipulation. The joints of the limbs are considered seriatim, and every manipulation is described in such detail that it is difficult to digest more than a few pages at a sitting; it is a book, therefore, to buy and not to borrow from a library. The illustrations are numerous, but will be disappointing to those who have been charmed in the past by the line drawings illustrating another book by the same author. The whole forms a monument of patience, and will be of the greatest value to the would-be manipulator, who from it can in a few minutes find out exactly what manipulations to make and how to make them. For those interested in manipulative surgery the expenditure of eighteen shillings on these 228 pages is worth while. The type and paper are above reproach.

## HEALTH WORK OF THE LEAGUE

*The Romance of the Health Work of the League of Nations.* By Kathleen E. Innes. (Pp. 62; 1s., post free 1s. 1d.) London: The Women's International League. 1938.

Amid the political disintegration of the League of Nations its health work continues, and may well be the rallying-point for new international co-operation. Mrs. Kathleen E. Innes, a frequent visitor to Geneva, has compiled a booklet, *The Romance of the Health Work of the League of Nations*, in which she gives a very readable account of activities to which the word "romance" is for once not misapplied. The story begins with the thrilling fight against the spread of typhus in Eastern Europe by the temporary Epidemic Commission which was set up by the League in 1920 before the Health Organization was started.

The Organization did not really achieve permanence until 1923, but in fifteen years it has created many records in its efforts to combat sudden epidemics and continuing scourges like malaria and tuberculosis, in setting up biological standards (between twenty and thirty have now been established), in encouraging the study of nutrition and rural hygiene, in exchanging information (especially epidemiological intelligence) made possible by the Rockefeller Foundation, and in sending medical missions to various parts of the world. A strange thing is that a work so great should have been done within such strict limitations of expenditure; a stranger thing that even so it should have been criticized on the grounds of extravagance by Governments spending immense sums on armaments. Mrs. Innes suggests that the conquest of disease is enough to engage man's fighting propensities for all time if only they could be directed to such worth-while warfare.

## QUEEN CHARLOTTE'S OBSTETRICS

*The Queen Charlotte's Textbook of Obstetrics.* Fifth edition. (Pp. 668; 293 figures; 4 coloured plates. 21s. net.) London: J. and A. Churchill.

It is perhaps a coincidence that the publication of the fifth edition of this popular textbook maintains the three-yearly interval which has existed between successive editions since the first in 1927. The authors state that they have revised the book mainly because of further experience gained in the treatment of puerperal infections. The investigations made in specific chemotherapy at the isolation hospital and research laboratories cannot be too highly praised, and as adequate time has elapsed for a preliminary assessment of the value of this work the results now published will be welcomed.

It is disappointing to find the old term "albuminuria of pregnancy" retained. It is still more disappointing to find no reference in the description of this condition to the importance of hypertension as an early sign of toxaemia. Failure to measure the blood pressure and to appreciate the importance of its rise in pregnancy is still a frequent cause of disaster. The treatment of toxaemia is clearly and excellently described. In view of recent advances in *x*-ray pelvimetry criticism must be made of inadequate reference to this work. The teaching that in breech presentations a relatively high stillbirth rate is unavoidable is not strictly correct, although it may be soothing to one's pride. Episiotomy could well be mentioned as a means of assisting delivery and saving life in difficult cases. These are minor criticisms.

The paediatric section, which has been revised by Dr. Alan Moncrieff, is concise but comprehensive, and should be of the greatest assistance to students. The authors are to be congratulated on this new edition, and the publishers on the excellence of their production.

## SECONDARY GASTRO-INTESTINAL DISTURBANCE

*Clinics on Secondary Gastro-intestinal Disorders; Reciprocal Relationships.* By Julius Friedenwald, M.D., Theodore H. Morrison, M.D., and Samuel Morrison, M.D. (Pp. 251. 13s. 6d.) London: Baillière, Tindall and Cox. 1938.

Dr. Friedenwald and his collaborators have taken the idea of the old fable of the belly and members and given it a modern clinical application in studying the reciprocal relationships between the various systems of the body and the digestive tract. The stomach and intestines are the source of food supply for the whole body, which suffers when, by reason of disease or diminished absorption, this supply is interfered with. It is a common observation and almost a platitude in teaching that abdominal symptoms may be referred to the chest and vice versa. There are few general diseases unaccompanied by some gastro-intestinal disturbances, either by direct spread, by interference with circulation or nerve supply, or by toxaemia. The authors have collated these disturbances, recognizing, for instance, that digestive symptoms occur in heart disease, that symptoms of digestive disorders may be referred to the heart, and that combined disease of the circulatory and digestive organs may give rise to another train of symptoms, as in general arteriosclerosis. In this manner they consider the secondary gastro-intestinal disturbances in phthisis and diseases of the lungs, of the kidneys and urinary tract, the pelvic organs, endocrines, syphilitic infections, diseases of the liver and nervous system, the skin and eye, the influence of focal infection, and even the interrelation of diseases of the stomach and intestines.

The method of discussion is uniform in each instance; the one system may cause symptoms in or receive them from the other, or the two may be affected from a concomitant common cause. The result is a citation of possible conditions, a scheme for a differential diagnosis, interesting and suggestive rather than instructive, a little stilted and tedious though all-embracing. In their effort to cover the ground the authors have somewhat lost their clinical judgment, as when they state that the commonest digestive conditions observed at the menopause are ptosis and nervous gastric affections, a group which should rather come under the heading of the interrelationship of the digestive and nervous systems later. Each chapter is followed by a well-selected and adequate list of references for wider reading, and the book will fulfil a good purpose if its teaching is accepted that whenever digestive symptoms occur a complete survey of the entire body must be undertaken.

## THE TROUBLED MIND

*The Troubled Mind. A Study of Nervous and Mental Illness.* By C. S. Bluemel, M.A., M.D., F.A.C.P., M.R.C.S. (Pp. 520. 13s. 6d.) London: Baillière, Tindall and Cox. 1938.

It is difficult to see how the labour of compiling this volume of 500 pages can be justified. It contains a vast number of descriptions of the symptoms complained of by patients suffering from psychoneuroses, chiefly of the obsessive types, from epilepsy, and from some of the psychoses. There is no attempt to describe the psychological background in these case notes, and all the author can contribute is that there are "to-reactions" and "from-reactions" observable in everyday behaviour, and that the mentally ill tend to exhibit from-reactions which result in stress situations, hence the illness. Very true so far as it goes, as is the author's insistence that the patient must be considered as a whole, neither altogether from the point of view of mind nor altogether from the point of view of body; but most of us have heard these truisms before, although the author claims in his preface that the book contains some original theories concerning the nature of nervous and mental diseases. He has a chapter on the "public lunatic"—that is, the psychopath who appears in public affairs and assumes leadership, presumably of groups with whom the author is not in sympathy. Finally he concludes that if the patient is not in sympathy with the process of cure by suggestion and persuasion, which he practises, nothing can be hoped for—again a dangerous half-truth, for it would be sad if the patient who underwent a phase of negative transference should never have any chance. However, the author is clearly ignorant of or

out of sympathy with modern analytic technique, since he implies a dismissal of analysis as harmful because a patient, having been told by an analyst that his phobia of a knife was a fear of the phallus and denial of sex life, subsequently became depressed and confused. If this crude narrative was indeed the technique of the "analyst" he deserves all the author thinks of him; but, after all, that is not analysis.

## PESTS IN THE HOME

*Domestic Pests. What They are and How to Remove Them.* By Mrs. L. Hunter, M.Sc. Foreword by Professor Winifred Cullis, D.Sc., LL.D. (Pp. 236; 115 figures. 7s. 6d. net). London: John Bale, Sons and Curnow.

*Fleas as a Menace to Man and Domestic Animals: Their Life-history, Habits, and Control.* By James Waterston, B.D., B.Sc. Fourth edition. Revised by P. A. Buxton, M.A. (Pp. 20. 4d.) London: British Museum (Natural History). 1938.

It is common knowledge that the genial atmosphere of a reasonably managed house makes an appeal to the lower creation as well as to the human owner or occupier of the dwelling. Lured by the warmth and shelter, the pleasant recesses, the service of food, and the well-stocked shelves small rodents, insects, and arachnida are continually thronging in with a design to share these comforts with the rightful beneficiary. Were these invaders few in number and their behaviour exemplary no great objection might perhaps be taken to their uninvited presence, but when they are many, when they damage more than they consume, and when on occasion they assail the person of their adopted host even the most benevolent householder is compelled to take action in self-defence and to treat them as what they are—namely, domestic pests. What to do with these offenders and how best to do it is well set forth by Mrs. Hunter. She tells how to make cheap and effective fly papers. She rightly holds that a mass invasion by bugs or cockroaches cannot be adequately countered by domestic means. Vacuum cleaning alone without lifting the carpet fails, in her view, to displace the carpet beetle. If flour is found webbed together it is a sign of *Ephestia kühniella*, and the flour should be burned. Paradichlorbenzene, she says, is fatal to house moths, and a sufficiently dry atmosphere causes mites to perish. Her general prophylactic is cleanliness in the home. Her ruling principle with the arthropod is to attack the vulnerable point in its life-history. The book, which is introduced by Professor Winifred Cullis, is illustrated by good line drawings, and should be found of interest by housewives and all concerned with household management.

A re-issue in the Economic Series of the Natural History Museum exhibits by means of apt line drawings and a few pages of lucid text, originally prepared by Mr. James Waterston and now revised by Professor P. A. Buxton, the life-history of the flea, its evil eminence as a vector of disease, and the measures which may most usefully be adopted for its repression. Fleas are richly endowed by Nature for the ectoparasitic life. Being without a neck or waist they have a compact personality: being chitinized and laterally compressed they are enabled to resist or elude the stresses of their environment: and even their bristles are so set as to favour their easy progress among the hairs of their host's integument. They convey to man bubonic plague and a variant of typhus fever. As a personal repellent of fleas iodoform is effective. Floors in houses should be kept dust-free or, if the infestation is severe, treated with flaked naphthalene for twenty-four hours and then swept clean. Dogs and cats, heads included, should be soaked with warm 3 per cent. creolin solution and then given a warm soapy bath. Their bedding should be frequently changed or shaken daily. A prescription is given for the preparation of an all-purposes paraffin emulsion which kills every flea it touches, alike on floors, hangings, and the coats of animals.

## MALIGNANT MESODERMAL TUMOURS

*Malignant Tumours of the Skeletal Muscles, Fasciae, Joint Capsules, Tendon Sheaths and Serous Bursae.* By Gunnar Jönsson. *Acta Radiologica*, Supplementum XXXVI. (Pp. 304; 20 figures. 20 Swedish crowns.) Stockholm: P. A. Norstedt. 1938.

The author summarizes in this volume ninety-two cases of malignant tumours of the muscles, fasciae, tendon sheaths, and bursae obtained over a period of sixteen years at the Radiumhemmet, Stockholm. No case was included in the series which had not been diagnosed histologically. The record shows that the every aspect of the natural history of the tumours—age and sex incidence, clinical progress, response to treatment, prognosis, and intimate pathology—was studied. Unfortunately when the series is broken down into the several pathological groups the numbers in each group are small, but that does not prevent it falling naturally into two major divisions: tumours yielding a good prognosis, the fibrosarcomata and the myxoliposarcomata; and tumours yielding a poor prognosis, the remainder which includes the rhabdomyosarcomata, spindle and round cell sarcomata, and the synovialomata. This monograph is the record of an accurate and detailed survey of the results of treatment in a group of relatively uncommon tumours. It could well serve as a model for the reporting of the results of treatment of malignant disease.

# Notes on Books

The seventh supplementary volume of Heffter's *Handbuch der Experimentellen Pharmakologie* (Berlin: Julius Springer, RM. 12.60) contains two articles. The first, by Dr. K. Roholm of Copenhagen, on fluorine and its compounds, gives a full account of the actions of these substances, which, in addition to producing acute poisoning, can also cause a variety of forms of chronic poisoning. The second article, by Dr. R. Rigler of Frankfort, is on vasomotor tissue products. The author describes first the actions of adenosin, and then gives a short account of the wide variety of tissue extracts that have been shown to cause either a rise or a fall in blood pressure. Although many of these extracts are in therapeutic use under proprietary names, yet little is known regarding their chemical identity. It seems unlikely that much advance will be made in pharmacological knowledge in this field until we know more of its chemistry.

*Elementary Anatomy and Physiology*, by Dr. JAMES WHILLIS, is a departure from the prevailing method of presenting these two subjects in separate works, although it represents a return to the period when the consideration of structure and function was combined in one *Journal of Anatomy and Physiology*, and when in some cases the two subjects were taught by a single individual, who held a chair of anatomy and physiology in a university. The author has presented the main facts of human anatomy and physiology in a brief, terse manner which will be very useful to students who are studying these subjects with a view of passing an elementary examination, and also for medical students who are revising or are engaged on more advanced work. The illustrations by Pauline Lariviere are very clear, as also are the schemes illustrating the processes of blood coagulation and metabolism. The book is published by J. and A. Churchill at 12s. 6d.

The Charaka Club in New York, founded in 1896 by bibliophile physicians interested in the by-paths of medicine, especially C. L. Dana, has now brought out its ninth volume of *Proceedings*. The present volume, which contains thirty-six short, pleasantly written essays, shows that there are thirty-one active members. It is well illustrated and beautifully printed, the publisher is Richard R. Smith, New York, and the price 5 dollars.

In the work entitled *Estudios sobre Bacteriologia e Inmunologia del Tifo Exantematico* (Santiago: Soc. Imp. y Lito Universo), which is dedicated to his teacher Hans Zinsser, under whom he studied at Harvard, Dr. ATILIO MACCHIAVELLO, professor of epidemiology at the Chile School of Hygiene and director-general of public health in Chile, gives a full account of *Rickettsia prowazeki*, the anti-typhus vaccine of Zinsser and Castaneda, and preventive and curative sero-vaccination.

The fifty-fifth issue of the *Official Year-Book of the Scientific and Learned Societies of Great Britain and Ireland* (Charles Griffin and Co., price 10s. net) maintains the high standard of its predecessors. It is a useful and admirably produced work of reference, presenting concisely all the essential information concerning the large number of scientific and learned societies of the British Isles. The medical section occupies sixteen pages.

*Der akute Gelenkrheumatismus* (*Das rheumatische Fieber*), by ERNST VAUBEL, is the eleventh volume of *Der Rheumatismus. Sammlung von Einzeldarstellungen aus dem Gesamtgebiet der Rheumaerkrankungen* (Theodor Steinkopff, Dresden and Leipzig, price RM. 7.50). It is a short monograph on rheumatic fever (acute polyarthritis) with chapters on the history of rheumatism and its epidemiology, pathological anatomy, clinical course, prognosis, diagnosis, treatment, and pathogenesis, and a bibliography. The author's opinion is that the British-American term "rheumatic fever" is better than that of "polyarthritis rheumatica acuta" used in Germany. The notion of rheumatic fever as an entity conforms better with clinical experience, and this term comprises also those rarer forms which proceed without articular symptoms. "Rheumatism" as such is no disease, but a descriptive name for temporarily and locally changing pains of a special kind which by the patient or by the physician are referred to muscles, joints, or nerves. "Rheumatic fever" is a specific infectious disease the exciting cause of which is not yet known.

*Konstitution und Wesensaenderung der Epileptiker*, by KARL HEINZ STAUDER, is published by Georg Thieme at Leipzig, price RM. 10.50 (minus 25 per cent. abroad). Between December, 1932, and December, 1936, 2,215 Rorschach tests were made upon 1,780 partly healthy, partly epileptic people in order to answer the question whether the so-called epileptic change of personality is a syndrome of uniform structure, identical in cases of inherited and of acquired epilepsy. The epileptic change of personality must have a close relation to the epileptic shrinkage of consciousness. The so-called epileptic disposition varies from maximal to minimal preparedness for attacks, so that in many cases it becomes manifest by itself. Dr. Stauder holds that there is no genuine epileptic without any signs of an epileptic alteration of his personality; also the youngest person, who has had only a few attacks, shows already its first traces. Not every genuine epileptic becomes demented, but the Rorschach test shows that the old epileptic almost always bears the stamp of progressive deterioration of his intelligence. The results of the Rorschach tests indicate no correlation between duration of the disease and change of personality; but on the other hand epileptic dementia is related to the duration of the disease and to the number of attacks.

# Preparations and Appliances

## A SELF-RETAINING CANNULA FOR TAPPING CAVITIES

Mr. V. ZACHARY COPE, F.R.C.S., writes:

One of the commonest minor operations is the evacuation of fluid from a cavity by means of a trocar and cannula. When the cannula has been introduced it is sometimes necessary or advisable to retain it in position for some considerable time, as, for example, in the withdrawing of ascitic fluid. In such cases it is not unknown for the cannula to withdraw itself from the cavity, and this may lead to additional pain for the patient and inconvenience to the practitioner in the reinsertion of the cannula.

The instrument illustrated here has been devised in order to prevent this complication. It consists of an ordinary trocar and cannula with an additional tube fitted with a self-retaining device in the shape of an expanding head. The

manner in which the device is worked can easily be seen by looking at the illustrations. By pressure on the spring at one end the expanding head at the other is straightened so that it can be passed through the cannula. After the tube has been passed the pressure on the spring is released, whereupon the head expands within the cavity which is being tapped, and unless or until the spring is again pressed upon the cannula will remain *in situ*.

There is a lateral opening, with attachment for syringe, placed at the proximal end of the special tube; through this lateral opening it is possible to inject any substance into the cavity which is being evacuated. Actually the prime use for which the instrument was devised was for the injection of hydroceles. By using such a self-retaining catheter one can make sure that the injection fluid is placed well within the cavity which it is intended to obliterate.

Though I have not used this cannula for the pleural cavity it is clear that by its means one might easily withdraw clear fluid from the chest. It would not be suitable for drawing off purulent fluid.

The instrument has been made for me by the Genito-Urinary Manufacturing Company.

## TUBERCULIN P.P.D. FOR TESTS

Wellcome brand tuberculin P.P.D. purified protein derivative is supplied by Messrs. Burroughs Wellcome and Co. in the form of a dry powder together with a special borated solvent. The derivative is claimed to be the active principle of tuberculin, and provides a stable preparation of constant activity for tuberculin tests. It is available in three strengths,

# SOME OF THE SOCIAL ASPECTS OF MENTAL DEFICIENCY IN THE WAGE-EARNING CLASSES

BY

**RICHARD J. A. BERRY, M.D., F.R.C.S.Ed., F.R.S.Ed.**

*Stoke Park Colony, Bristol*

(From the Burden Mental Research Trust)

The scientific staff of the Burden Mental Research Trust, with the authority and approval of its committee of administration, has been fortunate enough to have had the personal co-operation and advice of such experts as the nature of the work in hand appeared from time to time to demand. One of the earliest so to assist was the late Dr. Shepherd Dawson of Glasgow, and it was he who sketched out the lines of the present investigation. His selection of the wage-earning rather than the salaried classes was not due to any inherent belief that mental deficiency is commoner in the former than in the latter, but because at Stoke Park Colony the material was available for the one and not for the other.

## The Material for Analysis

The material upon which this analysis is based comprises a series of 1,000 consecutive new admissions to the colony, and its accumulation has naturally occupied several years, hence the impossibility of completing the investigation during the lifetime of its inspirer. The defectives themselves are drawn from thirty-eight of the counties of England and Wales, and are in consequence fairly representative of those of the country's wage-earning classes whose families have had the misfortune to number among them one or more mentally defective children. The chief contributory counties are Middlesex (21.7 per cent.), Gloucestershire (14.8 per cent.), Derbyshire (5.8 per cent.), Essex, Hampshire, Kent, Lincoln, Sussex, and Yorkshire (all between 4 and 5 per cent.), Monmouth and Warwick (3.4 per cent. each), Glamorgan and Nottingham (2.8 per cent.), Surrey and Worcester (2.4 per cent. each), Herefordshire (2.0 per cent.), Bedford, Berks, Cheshire, and Northampton (all just over 1 per cent.), with the counties of Buckingham, Carmarthen, Cambridge, Cornwall, Denbigh, Devon, Dorset, Durham, Leicester, London, Merioneth, Pembroke, Radnor, Rutland, Suffolk, Salop, Stafford, and Wilts (all with just under 1 per cent. each).

Under English law the lives and liberties of mental defectives are very carefully safeguarded, and for the purposes of their subsequent care is demanded an official mass of information regarding the conditions under which they have lived before certification. It is these conditions which, as suggested by Dr. Shepherd Dawson, form the subject of the present study. Their ascertainment is the duty of the various official visitors appointed for the purpose. Reference to Table I will show that in 21.3 per cent. of the 1,000 cases the defectives had no homes, and in another 13.5 per cent. the official visitors have omitted to perform their tasks or have done so in such a perfunctory manner as to render the meagre information supplied of little or no value. It is much to be regretted that such important information has not been forthcoming for every case.

TABLE I.—*Diagnosis and Other Details of 1,000 Cases of Mental Deficiency*

| Designations | Original Numbers | Defectives with No Homes | Insufficient Information | Remaining Nos. Available for Analysis |
|---|---|---|---|---|
| 1. Idiots .. | 207 | 18 (8.7%) | 22 (10.6%) | 167 (80.7%) |
| 2. Imbeciles .. | 490 | 117 (23.9%) | 90 (18.4%) | 283 (57.7%) |
| 3. Feeble-minded | 235 | 77 (32.8%) | 12 (5.1%) | 146 (62.1%) |
| 4. Mongols .. | 66 | 1 (1.5%) | 11 (16.7%) | 54 (81.8%) |
| 5. Not certified | 2 | | | |
| Totals .. | 1,000 | 213 | 135 | 650 |

Defectives with no homes have a social significance entirely their own. In most of these cases the children have been found wandering, deserted by their parents, neglected, abandoned to the care of some public institution, or just moving about from one lodging to another.

## Analysis of Housing and Economic Conditions

The original investigations made by Dr. Shepherd Dawson (1931) of the general character of the population from which the patients of the Royal Hospital for Sick Children, Glasgow, were drawn covered a wider field than the present one. Both investigations have, however, some common objectives and have been conducted on similar lines. The present analysis seeks to ascertain the housing conditions of the families concerned, the economic basis of their lives, and the anti-social reactions (if any) of the people concerned.

The whole of the results for each and all of these observations is succinctly set forth in Table II, and the more it is studied the more striking the results seem.

TABLE II.—*Analysis of the Social Conditions*

| | Mongols | Idiots | Imbeciles | Feeble-minded |
|---|---|---|---|---|
| (1) Percentage with no homes | 1.5% | 8.7% | 23.9% | 32.8% |
| (2) Houses (number of rooms): | | | | |
| One-roomed houses .. | — | 2.2% | 3.0% | 4.9% |
| Two-roomed ,, .. | 4.4% | 4.3% | 7.0% | 9.8% |
| Three-roomed ,, .. | 13.3% | 10.8% | 16.2% | 17.6% |
| Four-roomed ,, .. | 17.8% | 25.9% | 24.6% | 28.4% |
| Five-roomed ,, | 37.8% | 42.4% | 33.8% | 29.5% |
| Six-roomed ,, .. | 17.8% | 10.1% | 13.3% | 9.8% |
| Seven-roomed ,, .. | 2.2% | 2.2% | 1.7% | Nil |
| Eight-roomed ,, .. | 6.7% | 1.4% | Nil | Nil |
| Nine-roomed ,, .. | Nil | 0.7% | 0.5% | Nil |
| (3) Grade of house: | | | | |
| (*a*) Very clean, tidy, well kept | 43.2% | 38.8% | 27.3% | 35.0% |
| (*b*) Average .. .. | 48.7% | 41.9% | 42.9% | 30.0% |
| (*c*) Dirty, untidy, ill kept | 8.1% | 19.3% | 29.8% | 35.0% |
| (4) Average No. of rooms per house | 4.84 | 4.52 | 4.28 | 3.97 |
| Average No. of bedrooms per house | 2.70 | 2.61 | 2.48 | 2.18 |
| (5) Average No. of persons per house | 5.22 | 5.61 | 5.43 | 5.67 |
| Average No. of persons per room | 1.07 | 1.23 | 1.27 | 1.41 |
| (6) Average weekly income in shillings per family | 59.52 | 58.49 | 50.07 | 49.72 |
| Average weekly income in shillings per person | 11.95 | 10.42 | 9.13 | 8.50 |
| (7) Percentage of families in receipt of public assistance | 17.4% | 12.1% | 21.9% | 24.0% |
| (8) Anti-social reactions .. | No cases | 3 cases | 5 cases | 46 cases |
| (9) Percentage of illegitimacy (including incest) | 4.54% (0) | 4.83% (1) | 14.28% (1) | 27.66% (1) |

## Social Significance of the Findings

Before directing the reader's attention to the clearly revealed fact that the feeble-minded are socially much the worst of the four classes differentiated, there may be offered one or two explanatory statements which will help in assessing the social significance of the facts elicited.

The grading of the houses in which the families lived presents several difficulties. On the advice of Dr. Shepherd Dawson three grades were adopted, though some authorities prefer four. Again, observers differ much among themselves in their ideas and estimates of what

constitutes a tidy, well-kept, and comfortable home. In the present analysis of the housing conditions the following has been the basis:

Grade I homes include such official designations as "clean and tidy," "beautiful," "good," "very good," "clean and comfortable," "clean and satisfactory," "excellent," and so on.

Grade II, or average homes, include descriptions like "fairly clean," "clean," "satisfactory," "fair," "good locality," and similar designations for an ordinary average working-man's house.

Grade III (dirty, untidy, and ill-kept) is unmistakable. In the present series it has been described as "dirty and neglected," "always very dirty," "dirty," "bad," "very poor, overcrowded, and dirty," and just "verminous."

As revealed by the figures of these 1,000 cases, the possession and maintenance of a Grade I clean and comfortable home does not depend on weekly income alone. While, naturally enough, the percentage of Grade I homes tends to rise with the higher weekly wages, such homes are found among widows in receipt of only a widow's pension of 10s. a week. First-class homes are indeed found scattered throughout every grade of weekly incomes from 10s. to 100s. It is therefore clear that an individual's personality and higher mental calibre can offset a poverty of income. In other words, poverty alone is not a cause of mental deficiency or of a dirty house. Those families who were recorded as being wholly or partially dependent for their weekly incomes on public assistance drew their sustenance from the usual sources, such as unemployment benefit, pension (war, widow's, and old age), national health insurance, and allowances by separated husbands, as well as the other tolls made by the mentally needy on the better-endowed sections of the community.

The percentage of illegitimacy is surprisingly high in the feeble-minded, in whom it outnumbers all the other classes put together. Not only are many of the patients illegitimate, but they themselves are not infrequently the parents of feeble-minded and illegitimate children. Children of incestuous parentage occurred three times in the series: none among the mongols, and one in each of the other three groups, the case among the feeble-minded being the worst.

The idiot girl—a very gross idiot—resulted from sexual congress between a father and his weak-minded daughter. In the case of the imbecile the parents were brother and sister, the former being a labourer and the latter a certified mental defective. From this incestuous union there was also another male child who was, in his turn, feeble-minded. The feeble-minded girl of incestuous parentage was a particularly shocking result of the cohabitation of a man with his own daughter. From this union there resulted six children, five of whom are definitely known to be mentally defective and who range from gross idiocy to very low-grade feeble-mindedness. This incestuous union was brought to a tragic end by the act of the father, who shot his daughter (the mother of the six children) and then shot himself.

The parents of feeble-minded children are physically, mentally, and morally more like their offspring than are those of the idiots and mongols. Few of the last two are nowadays to be found loose in the community, but of the feeble-minded there are hundreds, or thousands, or more probably hundreds of thousands. Consequently the facts revealed by this study of the social surroundings—largely of their own making—in which the families of the feeble-minded live have an even greater social significance than those concerning only the certified member or members of the family. The social facts recorded refer not to the segregated defectives but to people we see, read about, and meet in some guise or another almost every day of our lives. It might not unnaturally be thought that as the law rates the feeble-minded as of higher mental capacity than the idiots, imbeciles, and mongols, so also would their social conditions and surroundings show a considerable improvement over those of their mentally less well-endowed fellows. But this study reveals the exact converse. The feeble-minded are shown to live in the worst and most overcrowded houses, to be in possession of the highest percentage of dirty, untidy, and ill-kept homes, to have the largest number of persons per house and per room, to earn the smallest average weekly income, with the largest number of mendicants for public assistance, and in return for the latter to make the largest contribution to the annals of crime.

### Anti-social Reactions

In the case of the mongols none of their families was reported as showing anti-social reactions. In the idiots three of the patients themselves had come under the cognizance of the police for such offences as indecent exposure, chicken-stealing, and found wandering. Very similar charges were brought against the five imbeciles. The feeble-minded show a startling contrast to these. In forty-six of the 146 feeble-minded-bearing families (31.5 per cent.) one or more of their members, including the defectives before their certification, had been in the hands of the police on charges of theft, larceny, wandering, attempted suicide, neglect of children, soliciting, prostitution, false pretences, house-breaking, cruelty, and sexual perversions of various kinds. Doubtless such crimes as these are not confined to the feeble-minded—whether certified or at large in the community—but if those who commit them come under the terms of the Mental Deficiency Acts they are more than likely to become permanently immured in homes for the mentally defective. Their more fortunate, though probably equally defective, brethren may escape with the relatively minor punishment of a short sentence in a prison; but how far society is wise or justified in its well-meaning efforts to "socialize" the feeble-minded, thereby returning them to the community to continue their anti-social behaviour, is another and greater problem on which the reader may be left to form his own judgment. The fact remains that the highest legal grades of mental defect largely belong to the class of society with the lowest social conscience, and are the most productive of those asocial reactions legally graded as "crime."

### Comments by Dr. Fraser Roberts

*For the following comments on the genetic significance of the social facts recorded I am indebted to Dr. J. A. Fraser Roberts, principal investigator to the Burden Mental Research Trust.*

The results of this investigation, as set out in Table II, demonstrate very clearly that idiots tend to come from families occupying a social position superior to that of the families which provide institutional feeble-minded persons. The differences in Table II are striking, and show how great, on the average, the difference is. Imbeciles occupy an intermediate position, and the average social status of families providing mongols is superior even to that of those providing non-mongolian idiots.

One factor of possible importance has already been mentioned. There are many persons who, while clinically mentally defective, do not require certification under the Acts. These will practically all fall into the feeble-minded group. In that group only a minority of those potentially certifiable do, in fact, come under institutional care, and, naturally, those who display anti-social reactions, or who come from homes where they are neglected or ill-treated or who have no homes at all, will on the average be more likely to be certified than those more fortunately situated. But while this factor may be of some importance in determining the relatively low social position of the families producing feeble-minded persons, it could not account for the whole, or even for a great part, of the differences shown in Table II. One indication of this is provided by the imbecile group; doubtless the great majority of imbeciles ultimately find their way to institutions, and if this selective factor were of prime importance it could be anticipated that the social status of families providing

imbeciles would not be very different from that of families providing idiots. The table shows, however, that the imbecile group is much closer to the feeble-minded group than to the idiot group.

The findings of Table II are in harmony with some widely accepted views on the inheritance of mental deficiency. Idiots, who fall clearly into Lewis's "pathological group" (Lewis, 1933), will often owe their state to the action of genetic factors, sometimes the action of a single genetic factor; further, these will often be recessive factors. To the extent, therefore, that heredity is responsible, there will be no marked tendency for children and parents to resemble each other: idiots tend to crop up, more or less sporadically, in all social classes. The mongols provide an even more marked difference from mental defectives of higher grade. They, too, tend to crop up at all social levels, and the incidence in higher social categories may be little, if any, less than in the lowest. This is in harmony with the hypothesis that mongolism has a genetic basis, but that only a minority of potential mongols become actual mongols, the other necessary determining factors being non-genetic pre-natal influences of obscure nature, except the well-known predisposing factor of advanced maternal age.

Feeble-minded persons fall equally clearly into Lewis's "subcultural group." They are the tail of the curve of distribution of intelligence. Most of them are no more pathological than are very short persons, only that present-day civilization is too complex for the mentally undersized. Looked at in another way, for every feeble-minded person there will exist in the population a corresponding very gifted person whose intelligence exceeds the average for the community by as much as that of the feeble-minded person falls short of it.

There can be no doubt that heredity plays an important part in determining the level of general intelligence attained by the individual, and, as in the case of bodily stature and other continuously variable characteristics, it is to be expected that inheritance will be multi-factorial—that is, the difference between two individuals will depend, to the extent that it is hereditary, upon a large number of factors. In multi-factorial inheritance there is a clear tendency for parent and offspring to resemble each other: the very dull will certainly have many more very dull children than will the very gifted. It is to be expected, therefore, that the parents of the feeble-minded will themselves often tend to fall far below the average mental level of the community, and this circumstance will necessarily be reflected in the condition of their homes and in the economic plane they occupy, as is shown so strikingly in Table II above.

It is no surprise to find that imbeciles occupy an intermediate position. The fact that they are considerably closer to the feeble-minded group than to the idiots suggests that they have more genetic affinities with the former. In a recent investigation (Roberts *et al.*, 1938) it was shown that the curve of distribution of Binet I.Q.s corresponded to the normal or Gaussian form, characteristic of such measurements as stature, down to an I.Q. of about 45 (in children of about 12 years on the average), but that there was a big excess of persons falling below this low limit. The figure of 45 at the age of 12 might well correspond to about 40 in adults, and a number of persons classified as imbeciles in Table II had I.Q.s above this figure; furthermore, the numbers included in the investigation just quoted were too few to permit the fixing of the limit of normality of the curve with any great precision. But, wherever the line is to be approximately drawn, it is likely that those persons falling below it tend to belong to the "pathological group" and those above tend to belong to the "subcultural group." The imbecile group in this paper undoubtedly includes both types, and so yields intermediate figures. That the figures are closer to those of the feeble-minded group points to the possibility that the majority of the persons here classified as imbeciles owe their condition, to the extent that it is hereditary, to the combined action of a number of genetic factors.


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# Nova et Vetera

## F. J. V. BROUSSAIS (1772-1838)

In a paper read before the Section of the History of Medicine of the Royal Society of Medicine on January 11, Dr. J. D. Rolleston said that of the many illustrious medical men who flourished in the first half of the last century none obtained greater eminence during his lifetime, though his doctrines became obsolete before his death, than Broussais, the centenary of whose death was recently celebrated at his birthplace at St. Malo and in numerous articles in the French medical press. Although the work and even the name of Broussais were now almost unknown in this country, an article on him appeared eighty years ago in the eighth edition of the *Encyclopaedia Britannica*, to which Laennec and Bretonneau, far greater figures in the history of medicine, were not admitted until the fourteenth edition published in 1929. Broussais had little sympathy with English practitioners, whom he regarded as old-fashioned because they did not embrace his doctrines. He called his system "physiological medicine" because he wished to attach more importance to disorders of function than to anatomical changes. All diseases, according to him, were due to irritability of the tissues, and were aggravated by the action of therapeutic agents which exaggerated this property. He regarded the local lesion in disease not as the effect but as the cause of the symptoms of the affected organ, which in all cases was the same—namely, the stomach and intestines. There were, in his opinion, no specific diseases—cancer, syphilis, and tuberculosis were merely the end-results of chronic and often neglected inflammations of the alimentary canal. As he held that inflammation dominated pathology, he urged that an attempt should be made to prevent or at least combat it by an antiphlogistic regimen consisting in debilitants, revulsives, emollient drinks, and, most of all, local or general bleeding, especially by leeches, whereas emetics, purgatives, alcohol, and mercury, which stimulated the gastric mucous membrane, should be proscribed. The enormous vogue enjoyed by leeches as the result of Broussais's teaching resulted in their supply being exhausted in France, and importation of them from abroad took place on an enormous scale. Their extravagant use, though it survived longer than other parts of Broussais's doctrine, fell into disfavour as the result of the teaching of Louis and Chomel in France, Marshall Hall in England, and Skoda in Vienna. Although Broussais's doctrine, in the words of Triaire, was "as seductive in its simplicity as it was exaggerated in its exclusiveness and dangerous in its consequences," it predominated in Paris for about fifteen years, until it was finally overthrown by Laennec, Louis, Andrel, and others.

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In the sesquicentennial article on Sir James Clark (*Journal*, January 7, p. 20) Lady Flora Hastings was said to have died of malignant disease of the liver. Though this was the generally accepted diagnosis at that time, the suggestion made by Dr. Colin Macdonald in the *Medical Journal of Australia* (1935, **1**, 241) of tuberculous peritonitis with terminal fatty degeneration of the liver is more likely to be correct. By a curious coincidence Myers and Co. of New Bond Street, in their latest catalogue, are offering for sale a collection of over 200 autograph letters and documents relating to the Hastings scandal.

# ORGANIZATION OF MEDICAL SERVICES IN WAR

## GOVERNMENT'S SCHEME EXPLAINED TO THE B.M.A.

*Plans for the organization of medical services in time of war, with particular reference to the position of the private practitioner, were the subject of an address given by the Minister of Health, Dr. Walter Elliot, to a meeting of representatives of the profession at British Medical Association House, London, on February 15.*

Dr. Elliot laid emphasis on the fact that the arrangements would be put in operation only on the outbreak of war, and that there was no intention of dislocating the normal machinery of Government and of medical work throughout the country. As his hearers already knew, the Government had prepared a scheme of organization for civilian defence as a whole. Linked with the Regional Commissioner's Office in each of the twelve regions there would be the regional headquarters of each of the Government departments responsible for emergency services. The Ministry of Health would thus have a local staff of some magnitude under a senior officer. On this staff there would be a principal medical officer, whose task it would be to supervise and co-ordinate all the medical services in that area. He would have a number of medical officers working under him, including a hospital officer. This medical staff would also see that supplies of bedsteads, bedding, dressings, drugs, and other medicaments were available for the medical needs of the regional population.

### Making the Best Use of Personnel

In order to ensure the most effective use of the medical profession in war-time the Ministry of Health would collaborate with the Central and Local Emergency Committees set up by the British Medical Association. The Central Committee had already compiled a register covering 95 per cent. of the profession, showing each doctor's special qualifications and experience, and the type of war work for which he considered himself best suited. Copies of the appropriate part of the register had been supplied to the Local Emergency Committees. The Ministry of Health, having under its supervision the organization of emergency hospital services, of first-aid posts, and of emergency ambulance services, and having ascertained the probable requirements in medical personnel of the Service departments, would be in a position to ask the Central Emergency Committee to ear-mark beforehand a certain proportion of doctors to their war-time jobs.

There were too many uncertain factors in the situation to make possible a cut-and-dried scheme to include all doctors. The unpredictable nature of air attack made it in fact desirable that the arrangements should be elastic. Nevertheless, it was proposed with the aid of the Central and Local Emergency Committees to ear-mark as many medical practitioners as possible, according to age, qualifications, and experience, for certain classes of work for which their services seemed likely to be required in the earlier stages of a war. There were five such groups:

(1) The doctors who would give full-time service in His Majesty's Forces. (2) Those who would be required for the hospital services either immediately or in reserve (this would include those required for the maintenance of medical education). (3) Those who would control the first-aid posts. (4) Medical officers of Government Departments and local authorities. (5) Those who would constitute the medical boards for examining recruits.

There would remain a number of general practitioners upon whom would devolve the great responsibility of maintaining the essential medical services for the civilian population, including persons insured under the National Health Insurance Acts.

Those in the five categories, and the remainder responsible for the maintenance of normal medical services in war, should alike remain at their peace-time occupations until they received specific instructions to the contrary. The five categories would, however, receive in advance an indication as to the action which they would be called upon to take on the occurrence of an emergency.

### Details of Grouping

In the case of Group 1, doctors required for His Majesty's Forces, the Central Emergency Committee was engaged in determining the quota to be provided by each Local Emergency Committee upon principles which had been agreed with the Ministry. When these quotas had been determined the Local Emergency Committees would be asked for their suggestions as to the names of the practitioners who should be released for whole-time service with the Forces. (Practitioners would be consulted by the Local Committee before their names were sent in.) The second group, hospital staffs, would consist of practitioners already on the staff of hospitals or having special qualifications for taking up hospital work arising out of air raid casualties. In this connexion Dr. Elliot gave a brief outline of the basis upon which the hospital casualty service was being organized. The Government had assumed, he said, that the hospitals centrally situated within the larger towns or adjacent to probable objects of attack were so vulnerable as to be available in the event of war only for the initial reception of casualties. It was intended to remove casualties as soon as possible to hospitals further out in relatively safer situations.

The *x*-ray and other therapeutic equipment of these large town hospitals would be moved before the outbreak of hostilities, or as soon after as might be practicable, together with as many as possible of the medical and nursing personnel, to institutions away from the most dangerous spots. These institutions were being provided in advance with certain necessary additional equipment. The hospital scheme was thus a grouped scheme, under which casualty hospitals in the danger areas would be affiliated to appropriate hospitals in the relatively safer districts. In each of the twelve civilian defence regions a scheme of this kind was being worked out by the Government hospital officers. Under this scheme existing hospital supplies would be utilized with a maximum of effectiveness, but the ear-marking of additional hospital staff and necessary reserves would be undertaken.

As to the third group, first-aid posts, there would be in addition to existing medical units which could be converted with their staffs to use as first-aid posts in an emergency, about 1,000 fixed or mobile first-aid posts for which medical practitioners would need to be provided, and to some at least of these it would be necessary to attach more than one practitioner. Thus about two thousand medical practitioners not already attached to existing units would have to be ear-marked for this purpose. The doctors would have to give some collective training to the nursing staffs of the posts beforehand in peace-time, but, generally speaking, service at the posts would not take doctors away from their practices, as they would do duty in war-time only when the necessity arose.

The fourth and fifth groups, medical boards and the medical officers of Government Departments and local authorities, represented important branches of service for which medical personnel would have to be retained. War conditions would throw a great burden upon medical officers of health, and the movement of children from the more congested areas under the evacuation scheme would throw additional responsibilities upon the public health staffs in the reception areas.

### Payment of Doctors

Practitioners engaged whole-time in the civilian casualty service would be paid at rates comparable to those they would receive if they had entered the R.A.M.C. Although they would be employed and paid by the local authority or hospital concerned, the Government intended to reimburse the authority or hospital for the extra expense involved, and recognized for this purpose a scale of payment for whole-time service similar for the ordinary medical man to that of a captain in the R.A.M.C., with a higher scale for specialists or those with special responsibility. The exact arrangements would be settled in consultation with the British Medical Association.

In the case of doctors serving at first-aid posts payment would be made at the normal sessional rates of one and a half guineas for two hours and three guineas for a longer period. In peace-time it was intended that the practitioners selected to control the first-aid posts should receive from the local authority a retaining fee to cover their services in giving collective training to the nursing personnel assigned to them.

Dr. Elliot's speech was followed by a general discussion, in the course of which he dealt with a number of questions put to him on various aspects of the scheme.

## ONE HUNDRED AND SEVENTH ANNUAL MEETING OF THE

# BRITISH MEDICAL ASSOCIATION

## ABERDEEN, 1939

THE one hundred and seventh Annual Meeting of the British Medical Association will be held at Aberdeen next summer under the presidency of Dr. Thomas Fraser, consulting physician, Aberdeen Royal Infirmary.

The Sectional Meetings for scientific and clinical work will be held on Wednesday, Thursday, and Friday, July 26, 27, and 28, the morning sessions being given up to discussions and the reading of papers. The Annual Representative Meeting for the transaction of medico-political business will begin on the previous Friday, July 21. The full list of presidents, vice-presidents, and honorary secretaries of the scientific sections was printed in the *Supplement* of February 4. Other details of the arrangements for the Annual Meeting will appear in subsequent issues. We publish below the second of a series of descriptive and historical articles on Aberdeen and its medical institutions. The first article appeared in the *British Medical Journal* of December 31, 1938 (p. 1380).

## EARLIER MEDICAL HISTORY OF ABERDEEN

BY

G. A. G. MITCHELL, M.B., Ch.M.

From earliest times the region 'twixt Dee and Don has been a favourite site for human habitation, and the natives, owing to their relative isolation through a variety of natural circumstances, have developed certain individual characteristics which, though variously esteemed by others, have yet enabled them to play important parts in many spheres. Their record in the field of medicine is particularly interesting. In common with other towns, no exact information is available concerning the earliest medical history, but from the eleventh or twelfth century onwards Aberdeen was a place of some importance, and there is little doubt that persons possessed of such medical knowledge as was then available were resident in the town.

### Ancient Hospitals

Monastic hospitals were established from 1211 onwards, the Trinity, Dominican, Carmelite, and Franciscan Friars and the Knights Templars all having establishments in the town. A leper house also existed at an early date, and another hospital, dedicated to St. Peter, was founded in Old Aberdeen during the reign of William the Lion for the support of indigent and infirm people. These were not hospitals in the modern sense of the term, but most of them had herb gardens, and many of the monks did possess medical knowledge, so that before the Reformation people sought their aid for physical as well as for spiritual ailments. These hospitals suffered severely during the Reformation, but others of later foundation were more fortunate. Thus a hospital founded by Bishop Dunbar in 1531, and two hospitals connected with the Incorporated Trades or Guild Brethren (St. Thomas's Hospital founded in 1459 and the Trades Hospital founded in 1632) survived for several centuries.

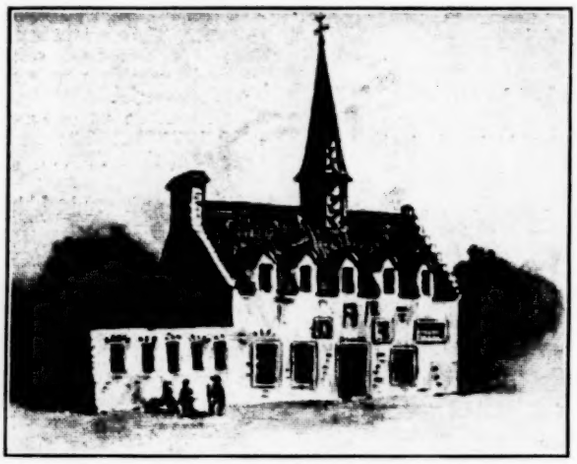

FIG. 1.—Dunbar's Hospital, founded in Old Aberdeen in 1531.

### Early Medical Practice and Practitioners

The first medical practitioner to step on the stage of local history whose name has been preserved was Donald Bannerman. Scion of an ancient family long and intimately connected with the burgh, he became physician to David II, who rewarded his services by grants of valuable land near Aberdeen. He must have died before 1373, for in that year his son Alexander obtained another grant of land, and the charter recites the "gratum et fidele servicium bonae memoriae quondam Magistri Donaldi Bannerman, medici." At a later period we find the names of many doctors, including that of the first professor of medicine and medical officer of the burgh, James Cumyne, who arrived in the town about 1502. The university gave him twenty "merks" and a free house, and the town ten "merks" and certain valuable fishing rights on condition that he should "mak personale residence within the said burghe, & cum & vesy tham that beis seik, and schow tham his medicin."

Medical practice in those days was difficult except in the cities, for the population was sparse and roads few or non-existent, and in country districts the ministers or lairds often acted as local practitioners. Even as late as 1700 there was only one doctor on the main road for fifty miles north of Aberdeen, and from the description of this gentleman with his frayed and faded garments and his shaggy pony his existence could have been none too easy. In the town itself, however, the more fashionable physicians made comfortable incomes. The ledger of one who settled in Aberdeen in 1682 after having studied in Leyden, Paris, and Padua has survived. It shows that many county families were numbered among his patients, including the Earl of Aberdeen, who apparently was a good patron and paid fees of varying amounts up to £67 Scots. Most fees, however, were much smaller, such as £8 for obstetric attentions to a baillie's wife, and £6 for treating Captain Garioch for "drunkenness." The Sheriff of Murray paid £6 9s. for treatment of the itch, Mrs. Leslie for vapours and itch £6 6s., and Mrs. Duncan "in gratitude for her salvation" paid £12 18s. Payment was often made in kind, and among the diseases most frequently mentioned are fever, ague, rheumatism, scrofula, pleurisy, cholera, vapours, flux, small-pox, and "hydropsie."

### Famine and Disease

Famine desolated the town on many occasions, due to poor crops and unfavourable weather, and despite the best efforts of the town council to buy corn in the South and on the Continent many people died of malnutrition or disease. The closing years of the sixteenth and seventeenth centuries were notable for extremely stormy weather, poor crops, and resulting distress. Diseases of different kinds also took heavy toll, plague in particular

FIG. 2.—The upper half of a memorial brass in St. Nicholas Church, Aberdeen, commemorating Duncan Liddel (1561–1613), famous as a doctor, mathematician, and author. The design shows the doctor in his study, and is believed to be by Jamesone, the Aberdeen artist who has been called the "Father of British Art."

claiming many victims. The first plague epidemic occurred about 1401, and there was another in 1498, when the town council introduced severe measures in an attempt to avoid the scourge. The four ports of the city were guarded against the entry of unauthorized strangers, and this measure was often employed subsequently whenever the disease was known to exist in the South. There was another epidemic in 1506, and a "most violent plague which continued for two whole years and carried off more people than had ever been remembered" occurred in 1514. This visitation, along with other untoward events of the time, was associated by the superstitious with the death of Bishop Elphinstone, a Glaswegian by birth but an Aberdonian by adoption, and one of the greatest Scotsmen who ever lived. There were many other epidemics before the last recorded one in 1647, when 1,760 deaths occurred within four months, almost 25 per cent. of the total population at that time. According to a clerical annalist rats were unable to subsist in Aberdeen, but there is reason to believe that this was due to cleanliness and not meanness. The freedom from rodents has been adduced by some historians as an explanation for Aberdeen's early immunity from plague, but they were not really absent, for in 1647 the magistrates enacted that poison should be laid for rats and mice when the plague was reported to be in Bervie and Brechin, and this was the first regulation of its kind in Scotland.

Though plague was the most serious of the diseases which ravaged the district, leprosy, small-pox, syphilis, dysentery, and cholera all exercised at various times and in varying degree a malign influence on the community. Leprosy appeared at an early date, and at Rothfan, well north of Aberdeen, there was a leper hospital for seven patients before 1226. The exact date of foundation of the Aberdeen hospital is unknown, and it appears to have been poorly endowed, for sometimes in the winter the cold and wretched inmates invaded the town "quherthrow they perrel the health of mony clene folkis." To remedy this evil James VI in 1591 granted to the hospital one peat from every load sold in Aberdeen. The last patient was admitted in 1604, and there is evidence that the building was in ruins not long afterwards.

Syphilis was probably introduced to Scotland about 1496 by the adventurers who followed Perkin Warbeck. The disease became widespread, and the Aberdeen council, always ahead of the times in public health matters, promulgated a regulation on April 21, 1497, which is the earliest of the kind in Britain and is thus worth quoting:

"The said day, it was statut and ordanit be the alderman and consale for the eschevin [avoidance] of the infirmity cumm out of Franche and strange partis [syphilis], that all licht weman be chargit and ordanit to decist fra their vicis and syne of venerie, and al their buthis and houssis skalit [emptied]."

Thus the Aberdeen councillors apparently discerned the usual method of spread of this disease at a time when Continental authorities were still ignorant on this point.

From 1608 onwards various epidemics of small-pox have occurred, and in several the mortality was very high. Inoculation, a method introduced to Britain in 1721, was extensively employed in the North, but it was entirely superseded by the procedure of vaccination in 1796. In Aberdeen district the first vaccinator was probably the

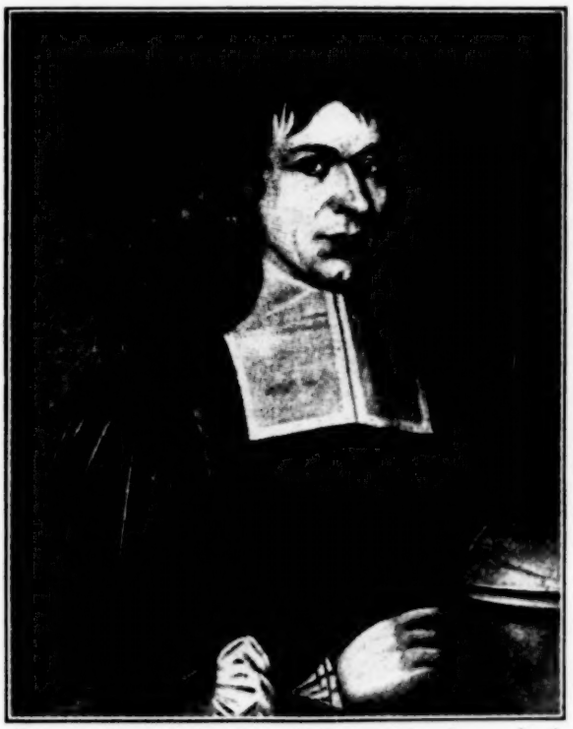

FIG. 3.—James Gregory (1638–75), the first of the "Academic Gregories," all descendants of a respectable Aberdeen saddler. This famous family in a period of 200 years supplied at least fourteen professors, mainly in medicine, mathematics, and philosophy, to British universities, besides producing a large number of other distinguished men.

Rev. A. J. Forsyth of Belhelvie, who later attained fame as the inventor of the percussion lock which revolutionized the firearms industry. It is recorded that

"on the first announcement of the principles of vaccination he put himself in communication with Dr. Jenner and thoroughly informed himself of all the details. His first patient was a young girl in whose family small-pox had broken out, and his anxiety was great until the success of the operation declared itself. Then everyone came to him to be inoculated."

### Early Medicine at the University

Aberdeen University is a compound of two much older, independent universities, one founded in Old Aberdeen by Bishop Elphinstone in 1494, and the other founded in New Aberdeen by George Keith, fifth Earl Marischal, a century later. From the medical viewpoint the first foundation is unique, as one of the original teaching members of the College of St. Mary, now known as King's College, was a "mediciner" or professor of medicine. The Papal Bull of Erection of 1494 and other early documents show that the new universitas was to be modelled on such famous mediaeval schools as Paris and Bologna, and thus it was complete in theory from the beginning, with faculties of arts, theology, law, and medicine, and the usual four degrees—Bachelor, Licentiate, Master, and Doctor. As a result the University had a wider basis than any other in Britain, inasmuch as it embraced medicine, and the significance of this may be realized when it is stated that there was no professorship of medicine in Cambridge until 1540, nor in Oxford until 1546. Dublin was equipped in 1618, Glasgow in 1637, Edinburgh in 1685, and St. Andrews in 1771.

It was evidently Elphinstone's intention to foster medicine, for its endowment is mentioned earlier than that of any other faculty, and it is noteworthy that the "mediciner" was the only one among the original masters who was "not in holy orders." Little is known of the scope and nature of the "mediciners'" teaching, but they were expected to "read in proper attire every reading day, after the manner observed in the Universities of Paris and Orleans," and the works of Aristotle and Hippocrates were among the books studied. To avoid misunderstanding it may be well to indicate briefly the place occupied by medicine in the early curriculum, for it must be realized that no attempt was made to produce medical practitioners. The students who attended the three or four years necessary to complete the "studium generale" took all knowledge for their province, and no man was considered cultured unless he possessed a knowledge of physic, though few who studied it had any idea of practising it as a profession. The aim was to produce not a practitioner but a scholar, not craftsmanship but erudition, and the degree "doctus in medicina"—learned in medicine—did not then imply that the owner had any practical skill, which was acquired in those days only through a system of apprenticeship. In point of fact separate medical degrees were not granted in the early days, but Aberdeen began to award doctorates in medicine from 1630 onwards; no other Scottish University granted similar degrees before 1696. In 1637 William Brown, Berwick, received the M.D. for a thesis "Bonum Factum de Hydrope," which is the earliest Scottish medical graduation thesis. The degrees of bachelor and licentiate were infrequently given, the first recorded recipient being Andrew Brown of "Dalphington in the shyre of Clydsdaill," who graduated in 1685 after "having been examined by Dr. Urquhart, mediciner, in presence of the rector, principall, and masters."

From the foundation charter (1593) of Marischal College we find that medical subjects were there also included in the curriculum from the beginning. The principal, among many other duties, was expected to teach physiology as set forth in the Greek text of Aristotle and to add a short explanation of anatomy. It was not until 1700 that a chair of medicine was founded in this college, and the professor undertook the teaching of all branches of medical science. Bitter rivalry existed between the colleges for centuries, despite repeated attempts at union, including several efforts to separate the medical course from the more literary, legal, and theological studies. The development of the younger school was helped greatly by the founding in New Aberdeen of the Infirmary in 1739 and the Medical Society in 1789, two institutions which have played an important part in the more modern medical history of Aberdeen. As a result, by the end of the eighteenth century it was becoming evident that the main focus of medical activity was shifting from Old Aberdeen to New Aberdeen, from King's College to Marischal College.

Much more could be told of the progress and vicissitudes of early medical education in Aberdeen, but time and space—and especially space—are uncompromising enemies. It must suffice to say that it was good and bad by turns, sometimes vigorous and sometimes moribund, but always succeeding in producing men who won renown for their University long before most of the other British schools had even been founded.

## A MEDICAL MANIFESTO ON WAR

We have received from Professor Âkil Moukhtar Özden, President of the Balkan Medical Union (22, Peyikhane caddesi, Istanbul), a manifesto, which is being addressed to the medical journals of the world with the aim of arousing if possible a favourable public opinion for adopting measures against the dangers to which the civil population will be exposed during a "total war." The Balkan Medical Union, though essentially a scientific organization, represents the ideal of bringing together the intellectuals of different countries so that they may know each other and come to a mutual respect and understanding, and in this way form a compact block in opposition to the misunderstandings that engender hate and disastrous struggles between nations. It was formed in 1931 by a few medical men sincerely convinced that this humanitarian aim could, and should, be attained. By holding "medical weeks" in Athens, Belgrade, Bucharest, and Istanbul the Union works to realize these aspirations.

### The Balkan Declaration

The Balkan Medical Union, in session at Istanbul for the fifth medical week, having taken into consideration the terrible sufferings which a total war will bring upon the civil population of open towns together with the total lack of any adequate means of protection, and having discovered that even in its restricted form the project of "sanitary towns" has not yet been adopted, and that all efforts made to protect civilians against chemical warfare have till now remained as proposals only, and that even the protocol prohibiting the use of asphyxiating gas has not yet been ratified by all nations, has therefore decided to address itself to doctors of every nation with an appeal to take active measures and to fulfil this professional and humanitarian duty of awakening and stirring public opinion. The Balkan Medical Union believes that only enlightened international opinion can make plain the imminence of the danger and the proved uselessness, even for the victor, of these terrible atrocities, and can thus lead to effective action. The immutable truth that hate breeds only hate, and atrocity breeds vengeance, must be impressed on everyone.

The signatories to the manifesto are Professor Bensis and Dr. Scaramanga (Athens), Dr. Zika Markoviç, Professor K. Sahoviç and Dr. M. Simoviç (Belgrade), Professor Gheorghiu and Dr. Popescu Buzeu (Bucharest), Professors Özden, Sedat Tavat, and Süheyl Ünver (Istanbul).

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The ninth annual report of the National Smoke Abatement Society for 1938–9 reviews briefly the effects of the transfer of the head offices from Manchester to London just over a year ago. In every way this move is regarded as a success, not only indirectly increasing interest in the work of the society, in making useful contacts, and obtaining fresh support, but also in an acceleration of the day-to-day activities at the office. In November and December last an exhibition, "Clear Smoke from the Air," was held in the Charing Cross Underground Station, prepared on behalf of the Society by the Gas Light and Coke Company; this epitomized in graphic form the case against atmospheric pollution by smoke. The new headquarters of the society are at Chandos House, Buckingham Gate, S.W.1.

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## RESEARCH IN CLINICAL MEDICINE

A series of recent articles and books betrays discontent with clinical research in this country. "Alpha," writing in *St. Thomas's Hospital Gazette*,[1] shows how many advances in medicine have come from the laboratory and suggests that there is no reason to regard research work as a vocation, which must perforce be ill paid and insecure of tenure. J. B. Harman, writing in the same journal[2] on the advancement of medicine, complains of the lack of experimental medicine in this country, which he contrasts unfavourably with Germany. A comprehensive review of any important subject in medicine would carry a bibliography that contained predominantly German and American names, and very few English. Our basic clinical standards, as, for example, those for the cytology and chemistry of the blood, we owe almost entirely to foreign studies. Our scientific apparatus and "scopes" for the more thorough examination of patients are of foreign invention if not of foreign manufacture. Want of native genius cannot be the reason for this difference in output, and the fault must be attributed to the organization of medicine in this country. In Germany the hospital doctor holds a position of prestige. In each clinic there is one director, under whom is a first assistant and then a series of subordinate ranks, each with an increasing number of members. The factor that weighs most heavily for promotion is the original work done, and every young man carries out research work under the direction of the professor. The average English houseman or registrar is as capable as his German counterpart, but he produces nothing of value, because his superiors are interested only in clinical work. The possession of the diplomas of M.R.C.P. and F.R.C.S. shows that Dr. Harman has spent his own youth in passing arduous examinations at a time when his German and American contemporaries would have been developing their powers of original thought. French medicine has strangled itself by a series of competitive examinations for higher appointments, and our own Royal Colleges have tended to be little more than examining bodies, though the College of Surgeons is now making praiseworthy efforts in the promotion of research.

We are still a nation of wealthy shopkeepers, whose health is looked after by clinicians who are as skilful in their craft as any in the world. Why should we waste money on research—and at the same time risk damaging our unique system of clinical teaching—when other countries are prepared to find new knowledge for us? The answer is that no great country can afford to allow its clinical medicine to become parasitic and unproductive. Professor T. R. Elliott has said: "The practical skill of British doctors in the case of individual casualties was surpassed by none, but in the great war they had shown themselves sometimes unable to help in the general answers to new problems that arose."[3] The development of physiology, biochemistry, and pathology as independent studies has tended to withdraw from our clinical medicine the qualities of a progressive science. Nevertheless progress is occurring, and the extent of the movement is well portrayed in a collection of addresses by Sir Thomas Lewis,[4] now published under the title of *Research in Medicine*. All of these have previously appeared in our columns, and we welcome their assembly in such a convenient form. The foundation of professorial clinical units in the University of London, understaffed and overworked though they have been, improved the level of medical education and ideals. More important from our present viewpoint was the foundation of departments of clinical research which were not burdened with teaching. In these Sir Thomas Lewis was the pioneer, and to him also we owe the Medical Research Society, now provided by him with its own journal, *Clinical Science*. Similar units have been founded at the National Hospital and Guy's Hospital in London, and at Oxford, Cambridge, and Manchester. All these units conform to the conditions laid down by Lewis. "If Clinical Science is to become established it must not be formed into a third unit, which shall presently detach itself and move off to a position of isolation; it must remain firmly within and develop as an integral part of the whole organization. And

[1] 1938, **36**, 542.
[2] 1939, **37**, 15.
[3] *British Medical Journal*, 1938, **2**, 760.
[4] *Research in Medicine and Other Addresses*, by Sir Thomas Lewis, M.D., F.R.S. London: H. K. Lewis and Co., Ltd. 1939. (5s.)

to secure this most desirable permanent unity it must establish itself not in laboratories of our medical schools but actually within our hospitals, centring upon the wards and out-patient department, and using laboratories merely as adjuncts and storehouses of necessary equipment. Above all we must guard ourselves against the obsession that useful discoveries are purely the prerogative of laboratories."

These desiderata reveal the weakness as well as the strength of clinical science, the term preferred by Lewis for research based primarily on patients. No man can become a clinical scientist without a working knowledge of clinical medicine. Having this, he is subject to a constant temptation to practise his art for its own sake, to deviate into routine work or humanitarian activities, and to forget his primary duty towards the advancement of learning. Moreover clinical science is expensive. It cannot discard its experimental animals when they prove unsuitable or have survived the experiment, for the subject of its experiments is man himself. In fact it cannot obtain them without offering therapeutic results above the average. Therefore it must be based upon a hospital equipped with the best of surgery, radiology, clinical pathology, and the like. The siting of the Nuffield clinical research units in Oxford, instead of in one of the well-established clinical teaching schools, has often been criticized on the grounds that it was inevitable in consequence that much of the money would be dissipated in satisfying hospital needs; and that the same amount of money spent on an institute of experimental medicine, like the Lister Institute or the National Institute of Medical Research, would have produced a larger harvest of new knowledge. All this may be true, but there are answers to it. A medical school without its own clinical departments must be unbalanced. It is a national fault to be forward in making fundamental discoveries and backward in applying them. The Nuffield medical benefaction and the new Nuffield College should help to open up this no-man's land of the practical application of the medical and social sciences. However expensive clinical science may be in comparison with laboratory science, it is an essential part of the totality of experimental medicine, and the work of the Empire in peace and war demands a corps of clinical scientists. The strength of clinical science lies in the fact that the proper study of mankind is man. Adult research must be something more than the curiosity of the child, and it has social value only in so far as it contributes to the health and happiness of mankind. The clinical worker is constantly reminded of the many important problems which remain to be solved and acquires a perspective which should discourage the practice of sterile exercises. "It is essential," Lewis writes, "that those who in studying human patients perceive opportunities of putting questions to the test of animal experimentation should themselves engage in such work; that correlation should not be left to the chance meeting and union of clinical and laboratory studies; that the spirit which moved the original inquiry should live, vitalizing and directing the whole work in its progress along a broad path towards a practical goal." The final issue of all medical problems, be they as old as the pains of childbirth or as new as the effects of poison gas, depends on human experiment, and it is desirable that, whatever the cost, this country should have a body of men trained to carry out such experiments.

## PROGRESS IN CHEMOTHERAPY

Chemotherapy has now taken a prominent place in the treatment of so many bacterial infections and its study is producing so vast a literature that it is beyond the capacity of any journal to keep its readers fully informed of all that is going on. It may nevertheless be helpful to take stock of the present situation, which is a good deal clearer than any which has preceded it, for reasons which are not generally familiar. The period of nearly four years which has elapsed since the public advent of the original prontosil is divisible into three stages. In the first, red prontosil in its two forms was the only therapeutic agent of this kind available. The discovery that this substance breaks down in the body to liberate sulphanilamide, and that the latter, given as such, has a similar therapeutic effect, led to its widespread manufacture under a multitude of proprietary names. It is important to a proper comprehension of these events to understand that, whereas prontosil was patented, sulphanilamide could not be, and the third stage in this history is that in which the research departments of leading manufacturing chemists have been busy synthesizing and testing new sulphonamide compounds with the object of finding one which will be both a boon to humanity because its action is superior, at least for some purposes, to that of the ubiquitous sulphanilamide, and a source of profit because it can be patented. Although thousands of such compounds have been synthesized, hundreds have been tried experimentally in animals, and a dozen or more have been used clinically, only two appear to call for individual mention: uleron because of its widespread popularity in Germany, especially

for gonorrhoea,[1] and M & B 693 for its epoch-making achievement in bringing pneumonia within the effective scope of this treatment.

During the whole of this time clinical rather than laboratory experiment has led the way in discovering the conditions other than infections by haemolytic streptococci which are amenable to treatment. Meningococcal meningitis and gonorrhoea are two other amenable coccal infections, and the pneumococcus has more recently fallen a victim to M & B 693; on the other hand streptococci other than *Str. pyogenes* are less or not at all vulnerable, and staphylococci are also in the somewhat resistant category. Among bacillary infections almost all those involving the urinary tract respond readily, as do the organisms of soft sore and (according to such little information as there is) gas gangrene; in undulant fever the effect is less striking. In the great majority of virus diseases sulphanilamide has no effect whatever; such reports of success as have appeared—as, for example, in distemper—may be interpreted as due to the prevention of bacterial complications. In another influenza pandemic chemotherapy is unlikely to influence the primary infection, but it will most certainly prevent many deaths from a secondary bacterial pneumonia. It will be noticed that to outline the scope of this treatment it is often necessary to speak of bacteria rather than diseases. To think in the same terms is often the clue to success in its employment; the location of the disease is of far less consequence than the identity of the responsible micro-organism. A knowledge of the varied capacity for evil of the haemolytic streptococcus is a useful asset from this point of view; besides many more obvious indications which it affords it will, for example, suggest that sulphanilamide, or preferably M & B 693, since a pneumococcus is sometimes concerned, be tried in all cases of otitis media and mastoiditis. On the other hand, in mixed and unknown infections, and in conditions of altogether doubtful aetiology, such as ulcerative colitis and various types of arthritis, it is unreasonable to expect a good effect and sometimes unjustifiable to use this treatment at all.

These are the fruits of clinical experience, but in the meanwhile much has been going on in laboratories with the object both of defining the powers of these drugs and of elucidating their mode of action. If this were fully understood treatment could be directed on rational principles instead of proceeding by a method largely of trial and error. Of various hypotheses which have been advanced two can now definitely be rejected: there is no satisfactory evidence that these drugs stimulate the bodily defence mechanism, either cellular or humoral, or that they act by neutralizing bacterial exotoxins. It has long been considered impossible for any substance to act as a mere direct antiseptic within the body, and the original doubts of this simple explanation were fortified by the total inactivity of prontosil *in vitro* and by the somewhat meagre powers of sulphanilamide when first tested under these conditions. Nevertheless a process of exclusion and some positive evidence as well are pointing to the action of these drugs on bacteria in the tissues as a direct one. Two facts in common experience suggest this: the unquestionable antiseptic quality of urine containing sulphanilamide, and the presence of obviously damaged and demonstrably dead bacteria, which have not been phagocytosed, in pus from cases under treatment. But a most illuminating observation has recently been made in the experimental field, which is simply that the bactericidal action of sulphanilamide on streptococci in serum is prevented by the addition of peptone. Without going into either experimental or interpretative details, it may at once be said that this observation indicates interference by sulphanilamide with the mechanism whereby streptococci utilize serum proteins as foodstuffs, and that this type of action may well be the whole explanation of its efficacy. If bacteria are prevented from extracting nutriment from their surroundings they will die just as surely, though possibly not so quickly, as if they were poisoned by some chemical penetrating into them. Even apart from their actual death, cessation of bacterial growth in an acute infection spells almost certain victory for the host, since the unhindered process involves the rapid mobilization of forces on both sides. If this explanation be correct, susceptibility to chemotherapeutic attack among different bacteria depends on their type of metabolism. What is known of the metabolic behaviour of staphylococci is consonant with their comparative resistance to this attack, and the indifference to it of most viruses is explicable on the lines of the recent suggestion that viruses let the cells they inhabit do their metabolic work for them. Whatever the truth in this matter may ultimately prove to be, it is reasonable and helpful to assume that the continuous maintenance of a certain concentration of these drugs in the blood and tissues, which can be secured by giving adequate doses at four-hourly intervals, greatly retards or actually prevents further bacterial growth; after a period of this suppression, which in acute infections need rarely exceed a week, the normal defence mechanism can complete the destruction of the invader.

[1] See articles by R. Marinkovitch in this issue at page 317 and by C. Hamilton Wilkie, *British Medical Journal*, 1939, 1, 57.

## INQUIRY INTO THE TREATMENT OF CANCER

The Ministry of Health publishes to-day the report[1] of an inquiry by Dr. Sholto Mackenzie into the proportion of cancer patients receiving treatment, the general nature of the treatment received, and the reasons for failure to obtain treatment. For the purposes of this inquiry "treatment" signifies radical surgery or any form of irradiation, since a distinction between palliative and curative irradiation is not easily drawn. The conclusions are based on the histories of 3,303 patients who died of cancer during six months of the year 1936 in eleven county boroughs and eight counties having a population of about five and a half millions. The patients are divided into three groups. The first comprises those patients, about one-sixth of all, with types of cancer for which no effective treatment is practicable. The second comprises patients, more than half of all, with cancers for which treatment is theoretically possible, given sufficiently early diagnosis; only about one-tenth did, in fact, receive treatment. The third group includes patients with cancers which are particularly amenable to treatment by virtue of their situation at or near the surface of the body; cancers of the breast, uterus, skin, tongue, and mouth parts are placed in this group. The third group contains about a quarter of all patients with cancer, and the number of patients is taken as a rough measure of those for whom both surgery and irradiation should be available. More than half of the patients received treatment, but only about one-quarter received it in hospitals known to be fully equipped for modern treatment. There were 1,907 patients in Groups II and III who received no treatment. Some refused treatment, some were too old, and others had concomitant disease which rendered it impracticable; but in more than half the disease was considered too far advanced. It was not possible to decide whether patients in urban areas attended for treatment at an earlier stage than those in rural areas, but, while the proportions receiving treatment were about the same, the urban patients of Group III more frequently received it from a fully equipped hospital. Additional information, available for cancer of the cervix only, suggested that the proportion of patients receiving treatment was considerably lower than is usual in specially equipped hospitals. In a prefatory note Sir Arthur MacNalty adduces these observations in support of the view that the guiding principles for action in the treatment of cancer are to ensure by means of wider provision of facilities for treatment and for early diagnosis that more patients receive treatment and that more receive it at an earlier stage, these considerations applying mainly to the forms of cancer especially amenable to treatment. Unfortunately the investigation yielded no new information about the causes of long intervals between the onset of symptoms and admission to hospital. Moreover the interpretation of the data for the "treatable" cases is obscured by the exclusion of all in which treatment succeeded; only dead patients are considered.

[1] *Cancer. An Inquiry into the Extent to which Patients Receive Treatment.* By the Hon. Sholto Mackenzie, M.D., M.R.C.P. Reports on Public Health and Medical Subjects: No. 89. H.M. Stationery Office. 1939. (9d. net.)

## CHEMOTHERAPY IN UNDULANT FEVER

It is always valuable to hear of extensive experience in a disease which one sees comparatively rarely, and a report on undulant fever from Malta commands attention for this reason. The main lesson to be learnt from Professor J. E. Debono's observations (p. 326) is the extreme difficulty of assessing therapeutic effect in undulant fever; as he points out, it is a self-limited disease, like pneumonia or typhoid, although of usually longer and much more variable duration, and to distinguish spontaneous cure from cure by a drug would only be possible in the individual case if the effect of the drug were dramatic and immediate. The inconclusive nature of their observations has been admitted by some of the numerous authors who have reported the apparent effect of chemotherapy in small numbers of cases. Nearly all these reports have been favourable to the treatment, and at first sight Professor Debono's observations appear to be in direct conflict with them. Lest his opinion should encourage the abandonment of a form of treatment which may after all be of some value, it should be pointed out that his cases differ in two ways from the majority of others. All were naturally infections by *Br. melitensis*, and it is possible that *Br. abortus*, the sole cause of undulant fever in this country and the commoner in many others, is the more susceptible of the two organisms to chemotherapeutic attack. Secondly, only seven of the patients were given sulphanilamide ("prontosil album" and "streptocide" are two of many proprietary names for this substance); the remainder received prontosil rubrum, the first of all these preparations and now generally looked upon as having been superseded by later products. It is not clear if there was any difference in the effects of the two drugs, whether possibly beneficial or toxic. Since almost all other clinical reports deal either with sulphanilamide alone or in some earlier cases with prontosil soluble, this series is not comparable with them; it may, however, be compared with that reported in the *Journal* by C. Z. Neumann (August 13, 1938, p. 342), also from Malta, who used prontosil rubrum in sixteen of his twenty cases, and was favourably impressed by the results. There is hence a conflict of opinion even in Malta, and one would like to see this resolved by a further trial in which only one drug was used, preferably sulphanilamide, with a standardized system of dosage given in alternate cases; only in this way can impressions, however fortified by repetition, be converted into facts. That sulphanilamide has a distinct if not startling effect on experimental infection by *Br. abortus* is shown by the work of G. S. Wilson and Irene Maier (*British Medical Journal*, January 7, 1939, p. 8). Large doses were found necessary in the guinea-pig, but these were administered only once daily; four-hourly administration, maintaining the concentration of the drug in the blood continuously at an effective level, presumably favours the action of more moderate doses in the human patient. It may well be, as these authors suggest, that sulphanilamide treatment is only justified in severe or protracted cases, but on present evidence it certainly deserves further trial.

## RETICULOSIS

A recent issue of a leading journal of pathology contains two papers on diseases within the category of reticulosis. Symmers[1] describes twenty-five cases of "giant follicular lymphadenopathy," some of which were associated with Hodgkin's disease or leukaemia, or terminated in sarcoma of the involved lymph nodes. Sacks[2] describes a single case of "reticulo-endotheliosis" and discusses its relation to other primary disorders of the reticulo-endothelial system. When diseases have no recognized nomenclature the process of combing the literature for previous descriptions of them is beset with difficulty; this is some explanation for the failure of both of these authors to mention the work of Ross,[3] who five years ago accurately described the disease with which Symmers is dealing, and pointed out that it had first been recognized by Foix and Roemmele in 1912. She also proposed a classification of the reticuloses which is the first to have been attempted on a rational morbid anatomical basis. The contribution to this subject of workers in this country is greatly amplified by the recent paper of Robb-Smith,[4] who has had exceptional opportunities for studying this group of diseases and gives a full histological description of a large number of types. The classification he proposes is elaborate, its main subdivisions being follicular, sinus, and medullary reticulosis, these in their turn being separated into four, three, and eight varieties respectively. According to his nomenclature, Symmers's cases would appear to be examples of chronic lymphoid follicular reticulosis, and Sacks's probably one of histiocytic sinus reticulosis. Robb-Smith also classifies reticulosarcoma into five main subdivisions, each including from two to five different varieties. This classification is likely to be criticized as unduly elaborate, but it forms a basis for further study, and future work on this subject will do well to take account of it, either adopting the nomenclature suggested or proposing such modifications as further study may indicate. Without entering at all into the complex histological aspect of this group of diseases it may be useful to draw attention to some of their general features in order that they may perhaps be more often recognized and thus subjected to fuller study. The term "reticulosis," in its now accepted sense, includes hyperplasias of lymphoid tissue occurring in the course of some infections, the three leukaemias, and a group of conditions among which Gaucher's disease is the best known, in which abnormal metabolic products are stored in reticulo-endothelial tissue. Apart from these, most reticuloses are characterized by the progressive enlargement of groups of lymph nodes, owing to a hyperplasia in which the spleen and other reticulo-endothelial tissue may or may not share, unaccompanied by characteristic blood changes. Lymphadenoma is a reticulosis, as are the ill-defined conditions which used to be called "aleukaemic leukaemia." Most varieties are progressive and ultimately fatal; some are much influenced by irradiation. It may be remarked here that classification is all-important as a guide to correct treatment. Wasting and a hypochromic anaemia are common accompaniments, and at least in one type there is prolonged high fever; other symptoms may be prominent and sometimes misleading, such as skin eruptions, ulceration of the throat or bowel, and jaundice. Nothing whatever is known of the aetiology of these conditions; they are not demonstrably due to infection and lack some of the characters of malignant growths. Until they secure more general recognition as an entity with many varieties, it will serve the progress of this recognition and of their better study always to consider the possibility of this diagnosis in any obscure case characterized by enlargement of lymph nodes.

[1] *Archiv Pathol.*, 1938, **26**, 603.
[2] Ibid., 676.
[3] *J. Path. Bact.*, 1933, **37**, 311.
[4] Ibid., 1938, **47**, 457.

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## RISKS OF INTRANASAL MEDICATION

The last few years have seen an increased use by the public—often without medical supervision—of "drops" for the nose. The dangers of lipoid pneumonia after intranasal instillation of various oily preparations have already been referred to in these columns,[1] and questions are still asked about them. T. E. Walsh and P. R. Cannon[2] attempt an answer to two problems: Do any of the intranasal medicaments do any good? and, Can they do any harm? It is clearly difficult to answer the first as accurately as the second. Nevertheless in a series of experiments designed to test the antiseptic properties of eight popular remedies used intranasally they found only one—1 per cent. thymol—which had any appreciable bactericidal effect, but unfortunately thymol interferes with ciliary action. Among wished-for effects removal of nasal obstruction is one of the most sought after, and the problem is to find a remedy which is harmless to the nasal mucosa and to ciliary action. In this respect weak saline solutions of ephedrine appeared to be best. Adrenaline in the usual strength of 1 in 1,000 caused immediate cessation of ciliary action. The authors found that not only were all of the oils commonly used as nasal "drops" capable of causing serious changes in the lungs but there was also the risk that pathogenic micro-organisms in the upper respiratory tract might be carried into the lungs and into an area of decreased resistance induced by the chemical agent. This risk would seem to be particularly great in infants and young children in bed, but it is by no means confined to this age group. Of the three new cases of lipoid aspiration in adults which are reported by Walsh and Cannon two were in good health and leading active lives. It is clear that the use of nasal medicaments without adequate medical supervision may be dangerous. Walsh and Cannon investigated the action of a silver protein preparation of which the manufacturers state that it is "non-toxic, definitely bactericidal, and, above all, it is markedly soothing to inflamed tissues." They found, on the contrary, that the solution was exceedingly toxic to the pulmonary

[1] *British Medical Journal*, 1938, **1**, 1112.
[2] *Ann. Otol. Rhinol. Laryngol.*, 1938, **47**, 579.

tissues of normal healthy rabbits, that it had no antiseptic effect upon purulent material from the bronchiectatic cavity of a human patient (although 1 per cent. thymol did), and that it caused not a soothing effect but necrosis of normal pulmonary tissue of rabbits. It is reasonable to suppose that such experimental evidence has some direct application to the human subject. The conclusion follows that an attempt to produce antiseptic or astringent effects in the nose with any of the liquids now in use is fraught with danger, but that the weak solutions of ephedrine ($\frac{1}{2}$ per cent. in normal saline) already mentioned are the only ones which should justifiably be used to produce vasoconstriction, since these alone neither damage ciliary action nor interfere with the flow of mucus.

## TOXAEMIA OF PREGNANCY AND DIET

Of the multitudinous aspects of the aetiology of pregnancy toxaemia that of dietary influence is one of the most interesting. It is generally held that some sort of inequality of food intake is responsible, in part at least, for the metabolic upset associated with the toxaemia, though the precise nature of the deficiency is widely disputed. Although most authorities automatically limit the intake of protein as a routine in all cases, some obstetricians actually increase this constituent in the diet, with a view to replacing that lost in the urine through inefficient renal filtration. Strauss[1] supports this treatment on the basis of the possible part played by the protein intake and the plasma proteins in the causation of water retention, a function supported by the positive clinical effects obtained in his patients by the administration of a high protein diet. In three cases he brought about complete disappearance of toxic symptoms, accompanied by much loss in weight, attributable to loss of oedema. These results are somewhat vitiated by the fact that vitamin B was given at the same time, for though Theobald[2] has shown that deficiency in both vitamins A and B has apparently no influence on the incidence of eclampsia the more recent work of Siddall[3] suggests that the $B_1$ factor may be of significance in the production of pre-eclamptic toxaemia. This worker, in the course of several years' practice in Canton, was impressed by the large number of patients showing signs of hypopituitarism, the high incidence of late pregnancy toxaemia, and the prevalence of beriberi (vitamin B deficiency). From this he assumes that the vitamin is essential for the normal function of the pituitary body, vitamin $B_1$ being as necessary for this gland as iodine is for the thyroid. When it is deficient during pregnancy there is a compensatory hyperfunction of the gland, with the typical toxaemic symptoms of hyperpiesis, oedema, and secondary metabolic changes. The circumstantial evidence in favour of this theory is considerable, but, quite apart from the doubtful value of the comparison, it does not explain why the deficiency reaction should be reversed by the fact of pregnancy. A further negative has been furnished by Ross and his co-workers,[4] who found that though the high incidence of toxaemia in the rural areas of North Carolina was paralleled by the frequency of nutritional diseases in the corresponding parts of the State, the systematic addition to the diet of all the vitamins had no appreciable effect in diminishing the toxaemia rate. This finding is of particular interest, for it emphasizes the futility of attempting to correct a grossly subnormal diet by so-called scientific supplementation. It is probable that the many causes of pregnancy toxaemia include some dietary disequilibrium, but not a simple mineral or vitamin deficiency.

[1] *Amer. J. med. Sci.*, 1935, **190**, 811.
[2] *Lancet*, 1930, **1**, 1115.
[3] *Amer. J. Obstet. Gynec.*, 1938, **35**, 662.
[4] *Amer. J. Obstet. Gynec.*, 1938, **35**, 426.

## PHARMACOLOGICAL RESEARCH

The annual report of research work carried out at the College of the Pharmaceutical Society in 1938 contains an account of a wide variety of activities. The department of pharmaceutical chemistry has continued chemotherapeutic studies of the acridine series. The department of nutrition has assisted in the preparation of international standards for various vitamins. Recent advances in organic chemistry have simplified some of this work, and it is interesting to note that the new unit of vitamin $B_1$ is 3 microgrammes of the synthetic substance. The department of pharmaceutics has investigated the possibility of improving the bactericides used in the sterilization of thermolabile substances. The use of phenol (0.5 per cent.) for this purpose is obviously out of date in view of the very wide choice to-day of far more potent antiseptics. A search has been made for a non-toxic stable disinfectant which will not react with the medicament, and the use of *p*-chloro-*m*-cresol (0.3 per cent.) or of phenylmercuric nitrate (0.001 per cent.) is suggested. Workers in the department of pharmacology have carried out a variety of researches. They have shown that ephedrine protects adrenaline from destruction, and have advanced evidence regarding the identity of sympathin and adrenaline. Investigation of the action of M & B 693 showed that, unlike sulphonamide, this drug did not increase the excretion of porphyrins in the urine, and in general the toxicity of M & B 693 was found to be about one-quarter that of sulphonamide. Researches on antipyretics showed that a number of these caused excretion of coproporphyrin.

Dr. Donald Stewart will deliver the Milroy Lectures before the Royal College of Physicians of London, Pall Mall East, S.W., on Thursday, February 23, and Tuesday, February 28, at 5 p.m. His subject is, "Industrial Incapacity and Modern Medicine."

The Goulstonian Lectures on "Diabetes Mellitus" will be delivered by Dr. H. P. Himsworth before the Royal College of Physicians of London, Pall Mall East, S.W., on Thursday, March 2, Tuesday, March 7, and Thursday, March 9, at 5 p.m.

# SURGICAL PROCEDURES IN GENERAL PRACTICE

*This is one of a series of articles contributed by invitation*

## RECTAL PROLAPSE

BY

**J. P. LOCKHART-MUMMERY, F.R.C.S.**

By a prolapse of the rectum we mean an eversion of the bowel through the anal orifice as opposed to the protrusion of a polypus or other form of pedunculated tumour. A prolapse may take a number of different forms, and it is most important, if the condition is to be treated successfully, to be able to distinguish one from the other.

### Prolapsed Internal Piles

The commonest condition is prolapsed internal piles. This is not a true prolapse, since only mucous membrane and not all the coats of the bowel is involved. The mass that is protruded may, however, be quite large and can easily be mistaken for a real prolapse. It will, however, be seen on examining the mass carefully that it consists of three, possibly four, main masses and is not completely tubular; also that there is much swelling and oedema of the skin at the anal margin, which indeed may account for the greater part of the swelling.

As a rule the prolapsed tissue is readily reduced, but it may happen that it has become strangulated, and by the time the doctor is consulted has been down for a long while and become badly swollen. An attempt should be made to reduce the mass; but this is very likely to be a failure, and in that event should not be persisted with. The central parts should be pressed up first, small flakes of wool being used to obtain a hold on the slippery mucous membrane. The difficulty as a rule is that as each portion is reduced it promptly comes out again. But if the central piles are pushed up together and held in place with the finger while the outlying mass is gently squeezed towards the centre, the whole mass will often reduce, leaving only the swollen and oedematous skin outside. A compress of lead and opium lotion should now be applied over the anus, together with a tight bandage. The prolapse will, of course, recur, and the patient should be advised to have the piles removed by operation as soon as possible; such cases are not suitable for treatment by injection.

If the mass proves to be irreducible, or refuses to stay up when reduced, the best treatment is to remove the piles by operation as soon as this can be arranged. The patient will thus be cured of his piles and be saved much pain and considerable time. When this is not possible, or the patient refuses to undergo an operation, the best treatment is to keep the patient in bed and apply lead and opium cold compresses (lotio plumbi cum opio diluted with water one-half) to the parts every four hours, and to give some sedative such as opium by mouth, or a half-grain opium suppository per rectum, to relieve the pain. Ice-bags should not be used, as they tend to produce gangrene of the inflamed and congested tissues. If there are already signs of gangrene in the prolapsed mass of haemorrhoids when the case is first seen it is better not to make any attempts at reduction. The swelling will slowly subside in the course of ten days or a fortnight, depending of course on the amount of strangulated tissue. Subsequent operation for the piles will almost certainly be necessary, and much time is saved by immediate operation.

### Irreducible Prolapse

It sometimes happens that the doctor is required to deal with a true prolapse which the patient has been unable to reduce. In such circumstances the prolapsed mass is generally a large one, some five inches or more in length, and there is a history of the bowel coming down on many previous occasions. It is also probable that the condition has existed for some hours and the tissues are blue and inflamed, partly from strangulation by the sphincter muscles and partly from the patient's ineffectual attempts at reduction. It is most important that the mass should be reduced as soon as possible or it may become really irreducible and possibly gangrenous. There is a definite technique in dealing with such a prolapse, and if this is carefully followed most prolapses will reduce unless serious secondary changes have already set in.

The chief factor which prevents reduction is that the two inner peritoneal coats of the prolapse get stuck together with lymph: if these can be loosened so that they slide on each other again, reduction is easy. The first step is to put a wet cloth or towel round the prolapsing mass and gently squeeze it between the hands so as to drive out some of the oedema. Gentle pressure should be kept up for some time, with the patient lying on his left side in bed with the knees drawn up. The prolapsed part should next be gently kneaded with the hands to try to loosen the inner coats, and an attempt should then be made at reduction, using cigarette papers or small flakes of cotton-wool. The mass should be held between the fingers of both hands and the thumbs be used to try to return the apex of the prolapse (see Fig. 1). The

FIG. 1.

FIG. 2.

FIG. 1.—Diagram of the condition in prolapse. A and B indicate the points at which attempts to reduce the prolapse should start.

FIG. 2.—The vertical lines show where the linear cauterizaton should be effected.

cigarette papers or wool should be placed under the thumbs to afford a grip on the slippery mucous membrane. If reduction does not result the whole mass should be again gently kneaded to loosen the inner coats and another attempt made. As a rule after a little patience it begins to reduce, and by working from the apex backwards the whole mass can be returned through the anus. Needless to say, no force must be used that might tear or damage the mucous membrane, and only gentle pressure should be exerted; reduction should always be started from the apex of the prolapsed bowel—that is, the last

part to come down. When the mass has been returned a large-bore rubber tube about six to eight inches long should be passed into the rectum and secured outside with a safety-pin and bandage. This will prevent an immediate recurrence of the prolapse.

Should reduction prove impossible or gangrene be starting arrangements must be made for amputation of the prolapsed mass, as reduction might result in a fatal peritonitis. This is not an operation that should be lightly undertaken, since it involves extensive opening of the peritoneal cavity and considerable haemorrhage. It must also be borne in mind that coils of small intestine may be present between the anterior coats of the prolapsed tissue.

### Prolapse in Infants

Prolapse is often met with in young children, and in most instances results from malnutrition and careless nursing; it may also follow an acute attack of diarrhoea or any wasting illness resulting in loss of weight, such as whooping-cough or measles. In most cases the condition can be cured without the need for any operative procedure, unless it has been present for a considerable time. The general nutrition of the child should be improved so far as possible by careful feeding and the administration of iron and cod-liver oil: syrup. ferri phos. co. 1 drachm, with a teaspoonful of cod-liver oil or an equivalent amount of halibut-liver oil three times a day. At the same time everything possible should be done to prevent the prolapse recurring. For at least a week the child should have the bowels moved with a small enema of soap and water (half a pint) only while lying on the side in bed. The best way to do this is to place a mackintosh under the child and a large pad of wood-wool or tow to receive the excreta. The mother should be instructed to see that after this, for at least a couple of months, the child should relieve itself by squatting over a tray or newspaper; it should on no account be allowed to sit on a chamber or lavatory seat. As a rule, if this routine is carefully carried out and the child's general health is improved the bowel will cease to come down and there will be no further trouble. If the condition persists, or if it has been neglected for some time, operation may be necessary.

#### OPERATION FOR PROLAPSE IN INFANTS

The operation consists in pulling the prolapsed mass down as far as it will come (under an anaesthetic, not ether), and with a cautery at a dull red heat making deep linear burns longitudinally along it and on to the skin at the anal margin (Fig. 2). The mass is then returned, some petroleum jelly is squeezed into the bowel and a rubber tube inserted for twenty-four hours to prevent the prolapse recurring. The after-treatment should be the same as mentioned above—that is, the bowels should be opened only in bed and the squatting position be used at stool for a month or more.

One would imagine that there would be considerable pain after this operation, but such is not the case, and the patients do not complain of any serious pain or discomfort. The burning causes adhesions between the different coats of the bowel, and is all that is required as a rule to cure the condition in young children.

The injection treatment described further on for old people may also be used in children, but the total amount of oil injected should not be more than 4 c.cm., and an anaesthetic will be necessary as children will not tolerate the speculum.

### Prolapse in Old People

It often happens that one is consulted by an old person on account of a prolapse of the rectum which is causing great discomfort owing to its recurrence on the slightest strain or when any attempt is made to move about, and any question of operation is negatived because of age or by intercurrent disease. Such a case may be successfully treated and the patient rendered quite comfortable, for a time at any rate, in the following manner:

*Injection Treatment of Prolapse.*—The patient should be instructed to get the bowel well cleared out by an aperient, and the next day a tubular rectal speculum, of the type used at St. Mark's Hospital, should be passed into the rectum with the patient in the knee-elbow position; or the left lateral position may be employed, though it is not so convenient. A good forehead lamp should be available if the speculum is not fitted with an electric lamp. The surgeon should have at hand a 3-c.cm. syringe with a hollow needle long enough to reach easily beyond the end of the speculum. The needle must be of sufficiently wide bore to allow oil to pass easily through it (20 wire gauge), and if possible should be fixed to the syringe with a bayonet catch or screw. The solution consists of phenol 5 per cent. in filtered almond oil to which has been added menthol, 2 grains to the ounce. With the syringe full, a spot on the anterior wall of the rectum should be chosen about three inches up the rectum and the point of the needle pushed just under the mucous membrane; 3 c.cm. of the oil should then be slowly injected, producing a large visible swelling. The surgeon's object is to inject the cellular space immediately under the mucous membrane. The appearance of the swelling is evidence that the injection is being made into the correct layer. This process is repeated on the two side walls until a total of 9 c.cm. has been injected. The injections are not painful, and no anaesthetic is required. The patient should at once go to bed, and should remain there for a couple of days.

In addition the patient should be instructed to wear a piece of rubber tube attached to a belt at the back and fastened by a strap and buckle in front. This will exert pressure over the anus and tend to prevent prolapse. As a rule this treatment effectually holds up the prolapse and gives great relief; it may be repeated in a couple of weeks or so if not entirely successful at the first attempt. The patient's bowel actions should be regulated to prevent straining at stool, and the best method of doing this is to use an enema every other day and relieve the bowels while lying in bed, employing a bed-pan.

### Prolapse in Adults

There are three degrees of prolapse, by far the commonest being the first degree, in which the rectum protrudes through the anal opening. The mucous membrane covering the prolapsed part is continuous with the skin round the anus, and there is no sulcus between it and the anal opening. In the second degree the upper portion of the rectum is prolapsed into and through the lower, and a sulcus exists between the outer coat of the prolapsed tissue and the anal margin; a finger can be passed up for a short distance into the rectum on the outside of the prolapsing mass. The third-degree prolapse is really an intussusception of the colon, and no part of the rectum is present in the prolapsed mass.

It is not possible to tell one form of prolapse from the other by inspection, but they can easily be distinguished if an attempt is made to pass a finger up beside the protruding mass. In the case of a first-degree prolapse this is impossible. In a second-degree prolapse the finger can be passed up for a short distance, and in one of the third degree to the full length.

It is important to differentiate between the various degrees of prolapse, since each requires different treatment; moreover, in the case of second-degree and third-degree prolapses, merely replacing the protruding mass inside the sphincter will not always reduce the invagination: it will be necessary to pass a speculum and see whether or not the whole invagination has returned to normal. It must be remembered that a large prolapse always involves the peritoneal cavity in the anterior aspect, and that in women, owing to the presence of Douglas's pouch, a shorter prolapse will do so than in males.

There is only one way of treating rectal prolapse in adults successfully—namely, by some form of operation—and this should be performed, if possible, before the frequent protrusion of the prolapse has badly stretched the sphincter muscles; or it may be necessary for a plastic operation to be performed on the muscles in addition to one for holding up the prolapse.

#### FIRST-DEGREE PROLAPSE

There are several operations that deal with this condition, two of which are described below.

*Lockhart-Mummery's Operation.*—This consists in opening up the posterior rectal space by means of a transverse incision between the tip of the coccyx and the anus. The space behind and to each side of the rectum is freely separated as high up and as widely as possible and then packed with vaseline gauze (2-inch selvedge gauze boiled in vaseline). Several yards of gauze should be used so as to occupy the entire space behind and at the sides of the rectum. The result of this is that healing can only occur quite slowly by granulation. A rubber tube is placed in the rectum and the bowels are kept confined for a week, the gauze packing being left in position. At the end of this period the patient is given an enema and the bowels are relieved; after this has been achieved an anaesthetic is administered and all the packing removed. The anaesthetic is necessary because removal of the packing is painful. The cavity is washed out with a mild antiseptic and repacked as before with vaseline gauze. The packing is then removed, a little each day until it is all out, when the cavity is drained with a tube and allowed to heal.

The adhesions produced hold the posterior and lateral walls of the rectum back in their proper positions, and the operation is quite successful. The patient should be kept in bed for a month, and for another month should relieve the bowels in bed by using a bed-pan. The anterior wall of the rectum is not refixed by this method, and in a bad case it is better to combine this operation with McCann's, which fixes the anterior wall.

*McCann's Operation.*—A curved skin incision with the concavity towards the anus is made in front of the anal opening and the incision is deepened until the anterior aspect of the sphincter muscles and the anterior muscle wall of the rectum are exposed. The edges of the anterior portion of the levator ani muscles are defined on each side as they sweep up to surround the vagina or prostate, as the case may be. The inner edges of the two levator muscles are now sewn together with buried catgut stitches, which also take up part of the muscle coat of the anterior rectal wall and, lower down, the upper part of the sphincter muscle. The skin incision is sewn up.

These two operations, combined or separately, will usually cure a case of prolapse of the first degree. Neither of these operations will succeed with a second-degree or third-degree prolapse.

#### VERY LARGE AND SECOND- AND THIRD-DEGREE PROLAPSES

For these cases the best operation is amputation of the prolapsing mass. This is a rather formidable and difficult operation, as there is much bleeding and the peritoneal cavity is of necessity widely opened. The results, however, are usually satisfactory, but steps must be taken to avoid a stricture at the line of junction. An alternative is sigmoidopexy, which consists in stitching the pelvic colon to the muscles and fascia in the left iliac fossa through an abdominal incision. The results of this operation have not been good, as the adhesions have tended to stretch, and in several cases internal strangulation of small gut has occurred under the fixed portion of colon. Moschcowitz's operation has also been recommended for such cases. It consists in complete obliteration of the true pelvis through an abdominal incision by stitching together the peritoneal lining of the pelvis in successive layers from the bottom of the pelvis upwards.

## ORTHOPAEDIC SCHEME FOR SOUTH AFRICA

### DIRECTION OF THE NUFFIELD GIFT

Professor G. R. Girdlestone, F.R.C.S., Nuffield Professor of Orthopaedic Surgery at Oxford, has prepared an outline of a complete orthopaedic scheme for the Union of South Africa following upon Lord Nuffield's gift of £100,000 for such a purpose.

The gift was intended to stimulate the development of orthopaedic services on an adequate scale, for both Europeans and non-Europeans, in the vast area of the Union, and the donor has expressed the hope that the sum will be used, in the main, in the creation of a living organization rather than in the building of one or more hospitals. Professor Girdlestone, during a recent visit to South Africa, found that both in administrative and in medical circles the scheme was acclaimed, and he secured the general agreement of certain official persons to the principles he has laid down. Mr. J. H. Hofmeyr, lately Minister of Mines, Labour, Social Welfare, and Education in the Union Government, has consented to be chairman of the Central Council for Orthopaedic Services which it is proposed to set up.

It is suggested by Professor Girdlestone that £40,000 of the gift should be set aside for the development of orthopaedic services in South Africa, to be allocated to the separate Provinces and for the various purposes as the trustees, in consultation with the Central Council, may decide, and that a further £20,000 be set aside for subsidies to selected specialist orthopaedic surgeons over a period of years, if the Union Government will give an assurance that the subsidies will be continued after this sum has been exhausted. The draft scheme provides that another £20,000 shall be invested to provide income for scholarships for selected young surgeons who, after two years in England, preferably in resident appointments, will undertake to return to South Africa and work there for a stipulated period. The remaining £20,000 is proposed to be put aside as an endowment for two Nuffield lecturers in orthopaedic surgery in the university medical schools of Capetown and Johannesburg respectively.

#### Outline of the Scheme

To ensure a comprehensive policy and at the same time to allow such elasticity of arrangement that the different conditions in the four provinces can be suitably met, it is proposed that the Union Government be asked to assume some general responsibility and authority. It is thought that a central fund might be established from which grants would be made towards provincial expenditure on the services. The governing body will be the Central Council, which will include representatives of the Union Government, the Union Medical Council, the Provincial Councils, the universities and medical schools, the existing orthopaedic services, and the South African

Medical Association. This Council, however, will be of the nature of an annual or biennial conference on matters of policy, and its powers will be largely delegated to an executive, one of the duties of which will be to keep the trustees of the Nuffield Fund informed and advised as to the orthopaedic situation in South Africa.

The provision to be made for patients, if the incidence in Great Britain be taken as a basis, is 37,500 out-patients and 9,600 beds, the proportion as between non-Europeans and Europeans being roughly, like that of the general population, four to one. It is suggested that the existing orthopaedic centres at Capetown and Johannesburg should be developed and additional main services with a full staff of specialists in orthopaedic surgery should be set up in Bloemfontein, Durban, and Port Elizabeth to serve the Orange Free State, Natal, and the Eastern Province of the Cape. In addition there should be orthopaedic departments in all the first-grade general hospitals, which will form subcentres dealing with fracture and short-stay orthopaedic work. Carefully thought out suggestions are made for the appointment and subsidy of the specialist staff. It is emphasized that the surgeons must have had a long training in surgery and considerable subsequent experience in orthopaedic surgery, and be prepared to devote themselves entirely to that specialty. The scheme provides for nurses and after-care sisters, some of whom at the beginning may have had their experience in Great Britain. Pregraduate teaching of orthopaedic principles at the universities and postgraduate training (especially through the taking of house-surgeon appointments) in orthopaedic hospitals are also visualized. The treatment of out-patients is the crux of the problem. The scheme proposes that the orthopaedic surgeons from the nearest unit should visit the out-stations at frequent intervals, spending a day or two at each on the examination of new cases, the performance of minor operations and manipulations, and the review of fracture and other acute bone cases treated since the previous visit. The larger out-stations would have attached to them full-time after-care sisters, and there would be bed accommodation for short-stay and traumatic cases. It is hoped to secure the co-operation of general and cottage hospitals and medical missions, tuberculosis services, and municipal and voluntary services for maternity and child welfare and the school child. Education in hospital and residential schools for young cripples and employment agencies and sheltered workshops for older ones are other parts of the scheme.

To devise such a scheme for an area ten times that of England is no mean undertaking, but the outline in its imagination and purpose is as stimulating as the original gift.

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R. Quittancon (*Thèses de Lyon*, 1937–8, No. 64) records his observations on 133 cases of typhoid fever occurring in patients who had previously been inoculated, of which forty-seven were mild, forty-six moderate, and forty severe, though he states that inoculation against typhoid and paratyphoid is remarkably successful and failures are rare. The immunity conferred, which was of long duration in those inoculated during the great war, seems to be less durable with the present methods of inoculation. Clinically typhoid fever in the inoculated does not differ in any respect from the disease in the uninoculated, the same clinical forms being observed in both groups of cases. The possibility of typhoid being present should not be rejected when there is a history of previous inoculation, and the question can soon be settled by a blood culture. An agglutination test is of value in the diagnosis if the titre is positive 1 in 50 for typhoid and 1 in 100 for paratyphoid. Contrary to the widely prevalent view, the gravity of typhoid fever is as pronounced in the inoculated as in the uninoculated. In Quittancon's series of 133 cases there were twenty-three deaths—a fatality rate of 16.5 per cent.—and mild or severe complications were as frequent as in uninoculated cases.

# Reports of Societies

## THORACIC NEOPLASMS

A special discussion on the clinical and surgical aspects of thoracic neoplasms was held at a combined meeting of the Clinical and Surgical Sections of the Royal Society of Medicine on February 10. Mr. DUNCAN FITZWILLIAMS presided.

### Methods of Examination

Mr. J. E. H. ROBERTS, dealing first with carcinoma of the bronchus, said that he had no doubt that this disease was now much commoner than in the past. It seemed also to occur at an earlier age. He had personally seen a number of cases in patients aged between 20 and 30. At St. Bartholomew's about seventy cases were seen in a year, and at Brompton perhaps twice as many. The majority of these patients at the time the diagnosis was made were already incurable, and although many of them were so when they first consulted a doctor, yet a considerable number had been under medical observation for months before the diagnosis was completed. Now that operative removal was feasible and was known to be giving most hopeful results in suitable cases it was of the utmost importance that the possibility of the presence of a bronchial carcinoma should be considered early. The first step was a good radiograph. If a shadow was seen which might be a carcinoma the next procedure should be a bronchoscopy. In no circumstances was it justifiable to wait to see if the shadow increased in size with the lapse of time; this irrational procedure was not yet quite obsolete. Bronchoscopy skilfully performed under local cocainization disturbed the patient very little. Contra-indications to operation were: extension of the growth to within less than an inch of the carina, widening of the carina indicating gross enlargement of the lymphatic glands at the bifurcation of the trachea, fixation of the trachea and bronchus, and paralysis of a vocal cord. Failing a positive result from bronchoscopy a bronchogram should be taken. It was important to have a true lateral film as well as an antero-posterior one, and no iodized oil should be allowed to enter the opposite lung. Diagnostic puncture of a supposed growth by passing a hollow needle through the chest wall and examining histologically the tissue obtained had been practised successfully on the other side of the Atlantic. The objections appeared to be theoretical and the method to be worthy of extended trial.

Turning to treatment Mr. Roberts said that he regarded irradiation as palliative only, not curative. He had yet to see a proved case of carcinoma of the bronchus permanently cured by any form of irradiation. Where the growth and the glands known to be involved occupied an area of such a size that a full dose of *x* rays could not be given to the whole area it was better not to use them at all, as the patient was only made to feel more ill without any useful result being obtained. Operative removal in suitable cases offered the best chance of permanent cure, but good results could only be hoped for if the diagnosis was made early, before glandular involvement occurred and before severe sepsis set in. Exploratory thoracotomy by an intercostal incision offered the only certain means of proving whether enlarged glands were absent, and fortunately this procedure was very well supported by the elderly. He had opened the chest of a man aged 75, found masses of unsuspected glands in the mediastinum, and closed the wound with surprisingly little post-operative disturbance of the patient. In something like 75 per cent. of cases the growth involved a large bronchus, and pneumonectomy by dissection of the pedicle and individual

ligation of its structures was the operation of choice. Where the growth was peripheral, however, and no enlarged glands were found removal of the affected lobe alone might give good results. The operative mortality of pneumonectomy performed by modern technique, with a skilled anaesthetist and with the aid of blood transfusion during the operation and an oxygen tent afterwards if necessary, should be no higher than that of major abdominal resections for carcinoma. The risk was greatly increased if sepsis was already present in the lung.

Innocent neoplasms within the chest, though not so frequent as malignant ones, were yet not uncommon, and, owing to their position within the thorax, as they enlarged they caused pressure on important structures and ultimately the death of the patient. In the examination of such patients *x* rays took an important place. The differential diagnosis between tumour and aneurysm might present very real difficulty, as many aneurysms did not show pulsation on the radioscopic screen and had none of the classical signs. Here the kymograph was useful, as pulsation of the expansile and not transmitted type was at once revealed. The final court of appeal was an exploratory operation. He had found that with the exception of teratomata the surgical exploration and surgical removal of innocent tumours of the chest was a safe proceeding with a low mortality. For that reason he believed that where a tumour which was producing no symptoms was discovered accidentally during the course of an *x*-ray examination it should be explored and removed forthwith. The best surgical approach for the majority of tumours was by an anterior or postero-lateral intercostal incision depending on the site of the tumour, with division of one or more ribs or costal cartilages if more room was required. Except in the case of a thoracic goitre, when it was very rarely required, he no longer split the sternum, as the other approach gave better access with less disturbance. Teratomata were more dangerous to life than other intrathoracic tumours owing to their ultimate connexion with the roots of the lung. Their removal was effected much more safely before the onset of symptoms, and especially before infection occurred. The one-stage operation was much safer than the two-stage.

### Symptoms and Signs

Dr. MAURICE DAVIDSON said that if any real headway was to be made in the treatment of intrathoracic tumours, whether malignant or benign, there must be a much more uniform and regular system of investigation of the patient. Not sufficient insistence was laid on the prompt employment of all modern methods of investigation when the presence of a neoplasm in the chest was suspected. The salient feature of any practical attempt to handle the problem of malignant disease was early diagnosis. No one experienced in the latest surgical and radiological technique would deny the ability to demonstrate the presence of lung cancer in cases in which a decade ago the condition would have passed unrecognized. But the exploration of these cases by thoracotomy had revealed too often a state of affairs beyond the reach of surgery. What, then, was lacking? He gave priority of place to careful clinical history. It was on an accurate and detailed history that the value of one's examination in a very large measure rested; in its absence the usefulness of mechanical methods of examination must be considerably diminished.

The onset of pleurisy was a late manifestation in bronchial carcinoma and indicated a commencing general spread of the growth. Where the growth was found to underlie a lung abscess breaking down had occurred and widespread metastasis was to be expected. He referred in particular to haemoptysis as the initial symptom, and the vital importance of treating every case of haemoptysis, no matter how slight. Just as in a young adult the occurrence of haemoptysis should be assumed to be due to pulmonary tuberculosis unless and until it could be proved by a process of exclusion to be due to some other cause, so in older patients this symptom should arouse the strongest suspicion of the presence of malignant disease in some portion of the respiratory tract. The recognition of any undue disproportion between the symptoms on the one hand and the physical signs on the other was also important. The general health of these patients and their state of nutrition did not deteriorate appreciably, nor was there any exhibition of the cachexia which was so prominent a feature of malignant disease elsewhere in the body. He felt that the occurrence of an unaccountable bronchitis in a middle-aged person who had never had such a condition before should remind one of the possibility of growth and suggest the need for complete investigation. *X*-ray examination of the chest had now become much more of a routine than formerly, but the recognition of slight abnormalities which might be of considerable importance in an *x*-ray film was still far from general. There must be many cases in which *x*-ray examination some months earlier would have revealed abnormalities worthy of further investigation by bronchoscopy and bronchography.

With regard to benign intrathoracic growths, these were much less common than malignant, but they were recognized more readily than formerly, and with the widespread use of radiological methods of examination a larger number of them were discovered in routine work. Sooner or later such benign growths would kill by pressure, and the rate of growth could not be determined, nor could it be foretold when a sudden increase of growth would give rise to pressure calling for an emergency operation.

### Complications of Growths

Mr. G. A. MASON said that growths in the mediastinum and lungs were characterized by their clinical silence, attention not being drawn to their presence until the onset of some complication; possible exceptions were certain bronchial tumours in which cough, expectoration, and sometimes pain might be early features. Complications drawing attention to the presence of these growths were: (1) mechanical pressure symptoms, (2) haemorrhage, (3) inflammation, and (4) widespread metastases. In addition to the usual physical methods, several forms of *x*-ray examination were generally required for diagnosis; tomography was becoming almost essential. The diagnostic use of artificial pneumothorax was sometimes helpful, and endoscopic forms of investigation were almost invariably necessary.

With regard to treatment, the induction of artificial pneumothorax, unless required for diagnostic purposes, was useless if not positively dangerous. Whether local, regional, or general forms of anaesthesia were used in particular cases facilities for obtaining, at the shortest possible notice, differential pressure or artificial ventilation must be available. They were rarely required, but there were patients who would not tolerate open thoracotomy without it. There were others in whom the likelihood of injuring a large vein in the midst of indurated tissue made air embolism likely, and for this also differential pressure was the only satisfactory precaution. It was also needed to maintain life if there was any likelihood of both pleural cavities being open at one time. After adequate anaesthesia adequate exposure was the most important controllable factor in intrathoracic surgery. If it was possible to do an operation extrapleurally it was probably preferable to do so, but the advantages were not so great as to justify being handicapped by an inadequate exposure.

### General Discussion

Dr. C. E. LAKIN discussed some of the difficulties in cases of malignant disease of the lung. He mentioned cases of thoracic neoplasm in which inflammatory phenomena (pleurisy, diaphragmatic pleurisy, and lobar pneumonia) called attention

to the more serious condition; also cases in which pyrexia of obscure origin was the chief manifestation of the disease and radiological examination of the chest disclosed a neoplasm, and again cases of metastases in the brain gave rise to neurological manifestations before the thoracic growth was suspected. In one case a girl was admitted to Middlesex Hospital with rigors and fever and signs of friction over one side of the chest. It was regarded as a case of ordinary pleurisy. Within forty-eight hours she had a very large effusion, so large as to be unusual, and to give relief a needle was introduced, which was found to be stained very deeply with blood. The patient gradually became worse and died within five weeks, and at post-mortem examination an extensive endothelioma of the pleura was found. Yet the case had started apparently as an ordinary acute pleurisy with rigors. Another case was that of a young man who was suddenly seized with acute pain whenever he tried to draw a deep breath. The condition of diaphragmatic pleurisy was suggested. He ran a temperature for ten days; this subsided, and he went away to the country and remained well for a fortnight, but two days after returning the same thing happened. The *x* rays showed five large rounded tumours in the lungs—three in one and two in the other—evidently secondary to an enormous tumour of the testicle.

Dr. A. HOPE GOSSE showed skiagrams of patients dying from primary carcinoma of the lung. Mr. ZACHARY COPE showed a specimen of a retrosternal thyroid removed from a man aged 53. An interesting feature of the case was that after removal of the thyroid tumour from the superior mediastinum the voice, which before had been of tenor quality, became of a bass tone. Mr. R. C. BROCK described two cases of dermoid cyst of the mediastinum, both successfully removed but followed in one case by death from metastases. He said that the removal of these mediastinal tumours carried a low mortality. Another case in which removal was successful was a ganglioneuroma of the superior mediastinum in a child. Mr. CECIL A. JOLL spoke of intrathoracic goitre. Such a goitre was one which lay wholly or mainly below the first rib. It was a comparatively rare condition, and its diagnosis was simple. It gave rise to symptoms as a result of pressure effects, the symptoms being dyspnoea and spasmodic cough, the cough practically constant. The skiagram would reveal the condition with practical certainty. No other condition would give rise to quite the rounded or lobulated shadow obtained with intrathoracic goitre.

Mr. T. HOLMES SELLORS brought forward four cases of carcinoma of the lung treated by operation (dissection pneumonectomy). He said that the important thing in diagnosis was bronchoscopy, which should be done at an early stage. So often bronchoscopy followed only after bronchograms had been taken almost *ad nauseam*. Valuable weeks or months might have been saved in many cases had bronchoscopy been done earlier. Mr. PRICE THOMAS said that there was some inclination to class dermoids and teratomata in one group without trying to differentiate them. Dermoid cysts could be radiologically differentiated from the more solid tumours in that they were in one view quite circumscribed. Teratomata were more diffuse in outline and much more likely to have complications than the dermoid cyst. The dermoid cyst was also more easy to manipulate on operative intervention than the teratoma. Dr. F. G. CHANDLER described a case of ganglioneuroma (dumb-bell tumour) with intense spastic paraplegia in a boy of five. There was recovery after operation. The first histological report on the case was "mixed-cell sarcoma," which was a mistake. He pleaded for simple nomenclature and intelligible classification. Dr. H. V. MORLOCK, who showed two cases of adenoma of the bronchus, said that there were certain contraindications to operation, though the absence of these did not mean that the growth was operable. If, however, the contraindications were not present and the history was clear he thought operation should be undertaken. Dr. PHILIP ELLMAN described a case of mediastinal dermoid cyst (successfully removed) with bronchiectasis, and also showed a specimen of cancer of the lung with carcinomatous cavities. As many as sixty cases and specimens were shown during a crowded meeting.

## MODERN TREATMENT OF SCARLET FEVER

A meeting of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health was held on January 27, with the president, Dr. J. A. H. BRINCKER, in the chair. A discussion on the modern treatment of scarlet fever was opened by Dr. J. V. ARMSTRONG (Brook Hospital, L.C.C.) and Dr. J. S. ANDERSON (Grove Hospital, L.C.C.).

Dr. Armstrong said that scarlet fever occupied only a comparatively small place in the large field of epidemic streptococcal diseases of the upper respiratory tract, and he expressed the hope that the scope of notification might be extended so that serious cases, even if no rash were present, might be notified and sent into fever hospitals for treatment. He briefly reviewed the history of the disease and its fluctuations in severity; although scarlet fever had been mild in the British Isles for some years, a severe type had been prevailing in South-Eastern Europe.

Most observers were now agreed that an early and sufficient dose of scarlet fever antitoxin aborted the initial toxaemia and, by so doing, put some check on subsequent invasive complications, such as otitis media, suppurative adenitis, etc. There was, however, a dearth of controlled experiments to prove the value of serum in averting complications, and such evidence as existed was to a certain extent conflicting. The route and dosage of serum were important in these respects. The work of Banks on the intravenous and intraperitoneal routes and the good results claimed by Ronaldson following the routine use of large doses (40 c.cm. intramuscularly) should be mentioned. The recent production of digested concentrated antitoxin was likely to solve the difficulties of giving adequate dosage and of serum reactions, whatever the dose or route. Convalescent human serum was also used abroad, and was probably bactericidal as well as antitoxic in its action. In Rumania it had had a considerable success.

Brown and Allison had done noteworthy work on the question of mutual reinfection of patients in open scarlet-fever wards with each other's types of streptococci. The logical outcome of their work was the nursing of all scarlet fever cases either in separate ward units or in "type-specific" wards. These were, perhaps, unattainable ideals, but at least new cases, septic cases, and cases with discharges could be isolated. The alternative of home nursing had been suggested by some workers, including Duncan Forbes, who had carried it out at Brighton since 1931, and claimed a saving of cost and the freeing of isolation hospital beds for other cases. For the system to be successful, however, the home conditions must be good and experienced medical and nursing attention must be available.

Patients treated in hospital were now discharged earlier than formerly, usually in the third or fourth week, when the infecting power of the initial streptococcal strain was thought to be at its lowest. Recent work had also shown that doubtful cases of scarlet fever could be discharged within the first ten days with advantage, if cultures of streptococci from nose and throat were proved negative. As regards the complications of scarlet fever, the importance of open-air treatment had, of late, been much stressed. The use of Wilde's incision in mastoid disease was, in the speaker's opinion, limited, and mastoidectomy was the operation of choice. The erythrocyte sedimentation test was of value in scarlet fever in assessing progress and forecasting complications.

In conclusion, the speaker thought that, since active immunization against scarlet fever, although abolishing the rash, did not completely prevent the local proliferation of the streptococcus, it was doubtful whether in communities such as fever nurses it was worth while, especially in view of the many other inoculations to which they were already subjected. It was, however, practised by many workers and several different methods were available.

### Sulphonamide Compounds

Dr. Anderson dealt with the employment of sulphonamide compounds in the treatment of scarlet fever. While it was agreed that these drugs had little or no effect upon the initial toxaemia and its febrile accompaniment, there was no consensus of opinion as to their effect upon the incidence of complications. Some investigators held, usually on unreliable statistical evidence, that there was some effect, but the majority were of the opinion that a combination of sulphonamide and antitoxin would probably give better results. On theoretical grounds this should be the case. The haemolytic streptococcus associated with scarlet fever produced toxin and also, by reason of its pyogenicity and invasiveness, sepsis. Hence the disease was a combination of toxaemia and sepsis. For the former a therapeutic agent of proved reliability was already available in antitoxin. For the latter sulphonamide would appear to be the answer. Therefore, antitoxin and sulphonamide would seem to be complementary in the treatment of scarlet fever.

Dr. Anderson then gave an account of an investigation carried out at the Grove L.C.C. Hospital in 1936 and 1937. The drugs employed were prontosil soluble injected intramuscularly on admission and prontosil rubrum administered orally for the ensuing week. The 417 cases were allocated to groups each containing over 100 patients. The first group received routine treatment, the second prontosil soluble and prontosil rubrum, the third antitoxin, and the fourth prontosil soluble and prontosil rubrum in combination with antitoxin. The results showed that, by itself, prontosil had no significant effect on the duration of the initial toxaemia. As regards the incidence of complications, by far the worst results were obtained in the routine treatment group and easily the best in the prontosil and antitoxin group. The combination achieved more than either antitoxin or prontosil could if used alone. It was also noted that there was a tendency for haemolytic streptococci to disappear more quickly from the throats of patients treated with prontosil. Dr. Anderson also referred to an investigation proceeding in which M & B 693 was being administered throughout the course of the fever. It was already evident that this form of treatment was productive of a considerable proportion of toxic rashes.

### Serum Therapy

Dr. H. S. BANKS stated that he was still in favour of serum treatment for all definite cases of scarlet fever admitted to hospital. In his opinion it was mistaken economy to employ serum in only a small proportion of the cases admitted to open wards, for under these conditions streptococcal infections of various types were apt to spread. On the other hand, when 90 per cent. or more of the cases in a ward had had antitoxin on admission, they were largely protected for at least three weeks and complications were greatly reduced. The three-weeks period of residence was, in his opinion, an important factor. Serum-treated cases, especially when the intravenous or intraperitoneal routes were used, did not require to be kept in bed for three weeks. They should be on an ordinary diet in two or three days, up in a week, and with few exceptions they could be discharged from hospital after about two weeks for adults and three weeks for children. With the inclusion of an after-care scheme of urine-testing, this policy had been continuously employed by him for twelve years, and he believed that the results proved it to be in the best interests of the patient. Using the new concentrated serum of Lederle there were rarely any reactions with intravenous serum. He had recently treated about two hundred cases with sulphanilamide (streptocide) in doses of 2 to 6 grammes daily, according to age, for five days from admission. The results were compared with a parallel series of serum-treated cases and found to be distinctly inferior; the initial toxaemia was uninfluenced by the drug, and heavy desquamation was common; nephritis and albuminuria were definitely increased and probably otitis media as well. Cyanosis and disorientation were commonly seen in these cases, but no permanent toxic effects and no sulphaemoglobinaemia. The latter effect was seen in one case of otitis media, however, in which proseptasine, 3 grammes daily, had been employed for thirteen days.

Dr. SAGE SUTHERLAND (Manchester) advocated the administration of anti-scarlet fever serum in every case, and referred to its prophylactic value in the prevention of otitis media, which was the most troublesome complication of scarlet fever, resulting in prolonged hospital treatment. In the prevention of this complication of scarlet fever, antitoxin, in selected cases only, was not of as great prophylactic value. At Monsall Hospital during the three years 1934 to 1936, with a yearly average of approximately 2,000 scarlet fever cases, the incidence of otorrhoea, excluding cases in which there was otorrhoea on admission, averaged 6.8 per cent., and during this period the average percentage of cases receiving antitoxin was 5.7. During the last four months he had given by intramuscular injection a commercially available highly concentrated serum from which the excess protein had been removed by a process of enzyme digestion. In 590 consecutive cases, seventy-five of which received 2.2 c.cm. and 515 1.4 c.cm., the incidence of otitis media had fallen to 3.6 per cent. Serum rashes appeared in 5.5 per cent. of cases, and only two cases of serum sickness occurred.

### General Discussion

Dr. R. W. TANNAHILL (Medical Superintendent of the Waltham Isolation Hospital) briefly described his experience with proseptasine in the treatment of scarlet fever. He had given to all the cases admitted over a period of six months 2 to 3 grammes by mouth daily for a week. The effect of the drug was not so marked on the initial symptoms as the effect of serum. The temperature did not fall so quickly and the rash remained for a longer time. Desquamation, not so frequently seen in the serum-treated case, was much more common in patients treated with proseptasine; complications were also more frequent. He had given up treating cases with proseptasine and returned to serum treatment. He found that 10 c.cm. given intramuscularly sufficed for the average case of scarlet fever. After hearing Dr. Anderson's paper it was evident that the combined treatment with prontosil and antitoxin produced the best results.

Dr. J. O. MURRAY (M.O.H., Rochester) regarded the admission to hospital of children suffering from scarlet fever was unjustifiable, unless isolation in single cells and barriers or classification and isolation in two- or three-bed wards was possible. The majority of cases could be dealt with at home, particularly if free domiciliary nursing was provided by the local authority. Severe toxic and septic cases should, of course, be admitted to hospital for special treatment, but they formed a very small proportion of the total number of cases. There were certain drawbacks to isolation at home, but they were not insurmountable, and were negligible when compared with the risk of cross-infection in open wards, a risk which always became more grave in epidemic periods.

Dr. M. MITMAN (Rivers Hospital, L.C.C.) said he was satisfied that antitoxin rapidly abolished the early toxic features of the disease and possibly diminished the incidence of complications. Sulphanilamide had no effect on the toxic symptoms, and he was not satisfied that it prevented complications to any appreciable extent. In view of its possible toxic effects he was not prepared to give it as routine to all cases, particularly mild ones. When complications were present the position was different and sulphanilamide was definitely indicated.

Dr. A. A. CUNNINGHAM stated that in America scarlet fever was generally mild, as in this country, and the majority of the patients were treated at home. Those admitted to the hospitals were nursed for the most part in separate rooms or cubicles, where the rigid Willard Parker nursing technique

was still observed. Specific serum treatment was reserved for the severe cases, and two methods were in use: (1) the injection of 20 to 100 c.cm. of convalescent scarlet fever serum, intramuscularly or intravenously; (2) the injection of Lederle's globulin modified antitoxin, 6,000 to 12,000 units intramuscularly or intravenously. Complications were few. Otitis media, when it occurred, was reported to have responded well to prontylin therapy by mouth. The tests for serum sensitivity rather differed from those in this country, both the intradermal and the conjunctival tests being applied. A positive conjunctival test, evidenced by the development of irritation, lacrimation, and redness coming on fifteen to twenty minutes after the instillation of one drop of horse serum, diluted 1 in 10, into the lower conjunctival sac, was rather uncommon, but its presence was held to be an absolute contraindication to intravenous serum therapy. He understood that there was no danger to the eye, as severe reactions were immediately controlled by the local application of one to two drops of 1 in 1,000 adrenaline. A positive conjunctival test was therefore of the same importance as a markedly positive intradermal test.

## STREPTOCOCCAL AND PNEUMOCOCCAL INFECTIONS

A meeting of the Association of Clinical Pathologists was held at the National Hospital, Queen Square, on February 4, when the special subject for discussion was the diagnosis and treatment of streptococcal and pneumococcal infections.

Dr. V. D. ALLISON reviewed the various classifications of the streptococci and pointed out how important it was, especially in midwifery practice, to be able to differentiate the haemolytic streptococci which produce definite puerperal infections from those which are occasionally found as saprophytes in the genital and upper respiratory tracts. Lancefield had shown by chemical analysis that β-haemolytic streptococci of human origin contained immunologically differentiated substances—namely, (*a*) a type-specific protein "M," which distinguished types conforming with the results of agglutination tests; (*b*) a non-specific nucleo-protein "P," which gave cross-precipitin reactions with similar substances from *Str. viridans*, pneumococci, and staphylococci; and (*c*) a non-type-specific carbohydrate "C," upon the nature of which the classification of haemolytic streptococci into groups by the precipitin reaction was based. Nine groups, A, B, C, D, E, F, G, H, and K, had been described by Lancefield and by R. Hare, and more recently two further groups, L and M, had been added by Fry and T. Hare. The distribution of the various groups and their relation to human disease were discussed. Members of Group A (*Str. pyogenes*) were by far the most important from the point of view of the clinical pathologist; they were those most likely to cause serious human infection, and were of considerable epidemiological importance. Upwards of 97 per cent. of strains of haemolytic streptococci from human infections belonged to Group A.

Dr. Allison then described the preparation of precipitating sera and the technique of the precipitin test, and showed the inability of biochemical and other tests to differentiate haemolytic streptococci. The Lancefield test allowed pathogenic and potentially pathogenic strains of haemolytic streptococci to be distinguished with a considerable degree of precision, and rendered it possible to eliminate as non-pathogenic many strains found in the upper respiratory tract, the faeces, and the vagina. Griffith had demonstrated by serological analysis that strains belonging to Group A comprised a number of well-defined types, identified by agglutination with specific sera. Some twenty-six types had been described, and no one type was exclusively associated with a characteristic syndrome. Serological typing was of considerable value in tracing the sources and spread of Group A infections, but had not yet reached the stage of being a practical routine laboratory procedure.

### Streptococci and Puerperal Fever

Dr. R. M. FRY said that haemolytic streptococci were by far the commonest cause of severe puerperal infections. He considered that Lancefield's method of grouping was one of the most important advances in the work on haemolytic streptococci. This method had been used as a routine at Queen Charlotte's Hospital for nearly three years, and a table showing the distribution of groups during this time revealed that over 90 per cent. of severe and moderate infections were due to Group A. Only in mild cases were many strains other than those of Group A found. A table published by Lancefield and Hare was brought forward as evidence that Group A streptococci were not normal inhabitants of the female genital tract.

Dr. Fry then described the severe cases due to groups other than Group A. Four Group B infections, all fatal, included three cases of endocarditis and one of subphrenic abscess and liver abscesses. Among seven Group C infections six were fatal. One was a case of endocarditis and was a pure infection, but the others were all mixed with other organisms, which certainly contributed to the severity of the disease. Five Group G cases, of which three were fatal, were all mixed infections. Dealing with the diagnosis of haemolytic streptococcal infections in the puerperium, he pointed out that Group A infections generally showed a heavy, nearly pure culture from the genital tract. If only a small number of haemolytic streptococci mixed with many other organisms was seen, it was wise to suspect some other group. He laid stress on the importance of the soluble haemolysis test, especially if grouping were not done, as by this means and with the help of differences in colonies a rough guess could often be made as to the group. Anaerobic cultures, he thought, should always be put up on account of the occasional tendency for a haemolytic streptococcus to appear as a green streptococcus in aerobic culture. This was especially noticeable with Group A, although other groups sometimes showed the change. The anaerobic streptococci found in puerperal fever accounted for from six to eight cases of septicaemia per annum at Queen Charlotte's Isolation Block. They were difficult organisms to isolate at times, as they grew slowly and were very intolerant of aerobic conditions. Although they were apparently a mixed group of organisms he thought that those concerned in fatal infections were probably closely allied, since the anatomical changes were so similar in all these cases.

### Streptococcal Infections in Infants

Dr. A. G. SIGNY pointed out that immunological reactions in infants were different from those in older children and adults. He instanced the passive immunity of infants to many exanthemata. Although some immune bodies derived from the mother lasted only one or two weeks, others, like the scarlet fever (Dick) antitoxin and the diphtheria antitoxin, were known to persist for as long as six months. In discussing upper respiratory infections of infants he spoke of the theory of middle-ear infections as the cause of infantile diarrhoea and vomiting. A series of seventy post-mortem examinations on infants under 1 year, of whom more than half had died of a primary or secondary diarrhoea and vomiting, revealed pus in one or both ears, proving that aural infection was a very common terminal condition in babies. In septicaemia a higher mortality was found in staphylococcal cases in infants, but in older children the mortality was higher in streptococcal infections. He described the lesions found post mortem in the two types, and also outlined the sequence of events in streptococcal infections of the nasopharynx in older children. Dr. Signy also discussed the findings in the cerebrospinal fluid in serous or aseptic meningitis following streptococcal infections of the mastoid. He pointed out that a long latent period might elapse between an infection and a subsequent nephritis or attack of rheumatism, and referred to the few proven cases of streptococcal erythema nodosum. He ended with a plea for the

wearing by all people who have to deal with infants of efficient masks, composed of cotton-wool between two layers of gauze.

### Epidemiological Views

Dr. F. CAMPS read a paper on the epidemiology of streptococcal infections, with special reference to scarlet fever. He stressed the fact that in assessing the epidemiology of streptococcal infections all diseases due to the organism must be taken into consideration. He pointed out that infections of the same type might or might not produce a rash, this depending upon the immunity of the patient to the Dick toxin and/or the toxin-producing power of the particular strain of *Str. pyogenes* (Group A), and hence scarlet fever was merely a syndrome. He mentioned that the mode of spread was chiefly by the droplet route, and by the hands, utensils, toys, and food. He then went on to outline particular types of epidemics, discussing those occurring in hospitals, cross-infections in fever hospitals, outbreaks in schools, infections in the community, and milk-borne infections. Finally, he summarized by saying that the control of the disease depended upon the appreciation of the various manifestations of infections due to *Str. pyogenes*, that these were really the same diseases whether a rash occurred or not, and that the route of infection in the majority of cases was originally droplet. He suggested that the future depended upon the discovery of some form of active immunization.

### Rheumatic Diseases

Dr. SINCLAIR MILLER (Harrogate) discussed the relationship of streptococcal infections to rheumatic diseases. He confined the discussion to rheumatic fever, rheumatoid arthritis, and osteo-arthritis. Osteo-arthritis, he said, would be rapidly dismissed as the joint changes were largely the results of degeneration and trauma, not of infection. He accepted a streptococcal origin for rheumatic fever, but the type of streptococcus involved and the mode of action were still shrouded in mystery. He regarded the haemolytic streptococcus as the most likely causal agent, but emphasized the occurrence of three phases in the development of the attack—namely, (1) an initial throat or upper respiratory tract infection; (2) a silent period of apparent recovery; and (3) the onset of rheumatic fever. During the silent phase changes in the body immunity occurred which allowed the development of the rheumatic attack. With regard to rheumatoid arthritis the consensus of opinion favoured a streptococcal infection as the causal agent, though many claim that tissue sensitivity played an important part. Rheumatic fever and rheumatoid arthritis had many factors in common, including a preceding upper respiratory tract infection and similar streptococcal immunological reactions. It was possible, however, to assess the exact aetiological significance of these various findings; he suggested that judgment should be reserved and investigations be continued energetically and critically without attempting at present too much interpretation of the results.

### Treatment by Sulphonamide Compounds

Dr. L. E. H. WHITBY gave a short account of the sulphonamide compounds available for clinical use, and indicated the range of activity and efficiency of the various preparations. He emphasized the need for early bacteriological diagnosis, not necessarily as a prelude to immediate empirical treatment but for the rational control of treatment when the infecting organisms had been definitely identified. The main principle to bear in mind when using sulphonamide drugs was that the appropriate drug must be absorbed into the blood stream in a concentration sufficient to be effective, and that this concentration must be maintained for a reasonable period of time. Clinical pathologists must be prepared to make estimations of the concentration of these drugs in the blood and spinal fluid. A number of methods of estimation were described. The choice of compound for a particular case was a matter to be decided by experience and judgment. As a general rule the oral preparations had the advantage of being well absorbed, and of maintaining a steady concentration in the blood. Soluble preparations were quickly absorbed but quickly excreted; their use demanded numerous and frequent injections. Soluble preparations were of value for beginning treatment and for supplementing oral preparations in cases where absorption was poor. They were obligatory when nausea and vomiting prohibited aural administration.

At the same meeting Dr. N. HAMILTON FAIRLEY outlined the investigation which had led to the synthesis of pseudomethaemoglobin, a pigment which he and Blomfield had first recognized in the plasma of patients suffering from blackwater fever, and which they had demonstrated more recently in incompatible blood transfusion, nocturnal haemoglobinuria, and pancreatic cyst fluid. Dr. E. R. ELKAN gave an account of his experiences with the xenopus pregnancy test (see also *Journal*, December 17, 1938, p. 1253). In the afternoon a series of laboratory demonstrations were arranged. The meeting was attended by more than 120 members and visitors.

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## BREATHING MACHINES

At a meeting of the Manchester Medical Society on February 1 Professor L. J. WITTS read a paper on "Breathing Machines—the Development of Artificial Respiration Apparatus."

He said that no one could pretend that the best solution had yet been found of the problem of prolonged artificial respiration and the organization of apparatus for this purpose. Few people in this country could have any extensive practical experience of these problems, and it was therefore most important that such experience as was available should be collected and collated. The subject of artificial respiration apparatus had been much in the news of late owing to the epidemics of poliomyelitis in Australia and Great Britain and to Lord Nuffield's offer to supply a Both apparatus to any hospital of over 100 beds. Names such as "iron lung" and "wooden lung" were not sufficiently comprehensive, and to avoid confusion with other forms of respiration apparatus and respirators Dr. Edgar Schuster had suggested the name "breathing machines." These machines had been classified under the headings of methods involving the complete enclosure of the patient's body, such as the Drinker and Both machines; methods involving partial enclosure of the patient, such as the Bragg-Paul pulsator, the Burstall jacket, and the biomotor; methods depending on variations in the posture of the patient, such as the Eve tilter; and methods of insufflation, such as the McKesson and Oxford respirators.

A film made by the Nuffield Department of Anaesthetics which illustrated various types of machines was shown by permission of Professor R. R. Macintosh. Professor Witts said that machines could also be classified according as they exercised positive or negative pressure on the chest wall, but these terms were often confused when applied to insufflation. Moreover in some machines, such as the Drinker and Laffer-Lewis modification of the Burstall cuirass, both positive and negative pressure could be applied. The relative merits of positive and negative pressure were still unsolved. All negative pressure methods were fraught with inherent difficulties in the nursing of the patient and the application of the machine. Positive pressure methods offend the physiological conscience, and are too often condemned on *a priori* reasoning. Current statistics were hardly worth analysis, and it was impossible to compare the more optimistic data with the grim figures from America, where 60 per cent. of the patients died in the Drinker and half the remainder were dead in eighteen months' time. What was urgently needed was the assessment of different methods on similar clinical material by the same observer. Another vexed question

was the value of breathing machines for acute emergencies such as drowning, poisoning, and electric shock. There was a risk that they might do more harm than good if people interrupted the well-tried manual methods of artificial respiration to fiddle about with unfamiliar apparatus.

On the proposal of Professor G. R. MURRAY a vote of thanks was accorded to Professor Witts.

## BUCCAL CANCER

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on January 13, with Mr. R. ATKINSON STONEY in the chair, Dr. OLIVER CHANCE and Mr. F. J. MORRIN presented a report on carcinoma in the buccal cavity, based on a series of cases treated in St. Anne's Hospital.

Dr. Chance pointed out that buccal cancer was relatively uncommon, roughly 200 cases being seen each year in Eire. From 1930 to 1936 he had kept notes of 539 cases, the bulk of which were very advanced when first seen. He analysed this series from the point of view of topography, age, sex, duration of symptoms, and presence or absence of enlarged glands; predisposing causes were discussed. In treating the primary growth, radiation therapy, usually by the implantation of radium needles, was preferred. Surgery was indicated in a limited number of cases. The treatment of the glandular field was regarded as primarily a surgical problem, and when surgery was out of the question irradiation, particularly with deep *x* rays, had its uses. As intensive irradiation was a form of treatment comparable in its severity with major surgery, considerable responsibility rested on the radiologist. He had to decide whether to push treatment to the limit in the hope of effecting a cure or whether to aim at palliation.

### Late Results

Dr. Chance described the methods of keeping notes and of following up cases used at St. Anne's Hospital, and considered the results obtained in the 178 cases which had been treated more than five years. These showed an absolute survival rate of 13.5 per cent., a crude survival rate of 15.7 per cent., and a net survival rate of 18.8 per cent. The results obtained in different sites were compared and the relative results of irradiation and of surgery were discussed. In conclusion Dr. Chance stressed the importance of early diagnosis and early treatment. This was illustrated by the fact that when glands were not palpable 27.3 per cent. of patients survived five years, whereas when they were palpable though operable only 6.45 per cent. survived.

Mr. Morrin said that in the treatment of the primary ulcer he was satisfied that radium therapy had displaced surgery, and that in future the treatment throughout would probably be by radium; at the moment, however, block dissection of the glandular areas gave the best prognosis. He discussed the indications for dissection of the cervical glandular areas. The operation he performed was either a bilateral submaxillary dissection or a unilateral complete dissection from the clavicle to the base of the skull, depending upon whether the upper deep cervical glands were enlarged or not. He described the operation fully and mentioned the immediate results in fifty recent cases.

### General Discussion

Mr. R. A. STONEY said that Kocher's submandibular excision simply opened up a large space for infection, though soon after the war he had found that by the use of bipp it was possible to get a more or less primary closure of the neck wound. With regard to modern methods, an important question was the order of treatment. Was it better to irradiate the primary growth first, or should one first remove the cervical glands? Dr. R. R. WOODS argued that the problem of buccal carcinoma was "primarily a problem of secondaries"; it was therefore desirable that both the public and the medical profession should be educated as to the absolute necessity for early treatment. Mr. J. H. COOLICAN also stressed the need for early diagnosis, and said that attendance at radium centres should be made compulsory for all students. In his experience gland dissections produced a very small degree of shock, largely due to the use of intratracheal anaesthesia. Mr. T. A. BOUCHIER-HAYES pointed out that at present students did not often see these cases until an advanced stage; they should be given the opportunity of seeing early cases. Mr. A. E. CLERY said he himself used avertin preceded by scopolamine and combined with local anaesthesia for block dissections of the neck. Dr. J. M. BRADY mentioned the value of contact therapy as compared with interstitial irradiation. Mr. J. C. FLOOD said that the reaction of carcinoma to any treatment depended upon the nature of the growth and its grade of malignancy. He thought it desirable that these growths should be graded before treatment was begun.

# Local News

## AUSTRALIA

### The Australian Cancer Campaign

The ninth Australian Cancer Conference was held in Sydney last April, and its report has now reached us. It was decided to form a statistical committee to report to the next conference (in New Zealand in 1939) on the bearing of the Registrar-General's data relating to the aetiology of this disease, the definition of occupations in this connexion, and the question of including these occupations in the records of cancer clinics and in the certificates of deaths. The importance of intensifying the work of educating the public was stressed. Professor E. C. Dodds of the Middlesex Hospital, London, who was the guest of the Commonwealth Government, delivered an address on medical research in cancer, which is printed in the report. He said that although advances in the knowledge of the cancer process had come from researches by general pathologists, general biochemists, and physiologists, very few had been originated by persons who set out in the first instance to conduct cancer research, and that the most logical line to pursue now was the development of general research in the basic sciences, such as chemistry, physics, botany, physiology, biochemistry, and pathology, out of which would undoubtedly come the furtherance of the existing lines of cancer research as well as the emergence of new lines of investigation. Dr. Robert Fowler of the Austin Hospital, Victoria, discussed the research value of clinical records, with particular reference to the following up of cancerous patients. He emphasized the importance of securing periodical statistical surveys, especially when several centres were contributing to a central registry, as in the case of the annual Cancer Conference conducted by the Commonwealth Department of Health. Dr. M. J. Holmes, senior medical officer of the Commonwealth Department of Health, gave figures indicating that in Queensland, South Australia, and Tasmania there had been considerable rises in the death rate in 1936 compared with the previous year. The mortality in women exceeded that in men in all States except Queensland and Western Australia, where the death rate for females was far below that for males. The mortality from cancer for the Commonwealth as a whole had risen by 3 per 100,000 for both men and women over the figure for 1935, and the tendency of the curve was still upwards, especially in respect of cancer of the rectum in both sexes and cancer of the breast in women. Cancer cases treated by radium often showed very definite improvement of the local lesions treated, even when death subsequently ensued from metastatic growths. Dr. H. E. Downes of the Department of Health gave a detailed statistical compila-

tion regarding cancer of the uterus, in the course of which he mentioned that 27 per cent. of patients with carcinoma of the uterine body and 10.6 per cent. of those with cervical cancer were childless; only 6.6 per cent. of the latter, however, gave histories of cervical laceration. The best treatment for adenocarcinoma of the uterine body seemed to be radon or radium, and combined surgery and radiology. A similar conclusion seemed to be forthcoming with regard to cervical carcinoma treatment. Radiological methods had greatly improved in recent years. The report shows also what the various States are doing in the way of improving diagnosis and treatment: in a general discussion emphasis was laid on establishing the histological diagnosis of cases of cancer of the uterus before attempting to use the results of treatment comparatively as criteria of the various methods of treatment. In some centres metaplasia might be classed as malignancy, while in others it might be excluded from comparison. The value of the use of mechanical tabulating machines in compiling the data for clinical research was also discussed at length. In a public lecture Professor Dodds pointed out that various diseases which at one time were more terrifying and disastrous than cancer had already been almost entirely eradicated, and that a hopeful view might well be entertained about the achievement of similar success in conquering malignant disease.

# ENGLAND AND WALES

### Hunterian Society Dinner

The 211th anniversary of the birth of John Hunter was celebrated four days in advance by the Hunterian Society at a dinner at the May Fair Hotel on February 9, with Mr. Andrew McAllister, the president of the society, in the chair. The guests included the President of the Royal College of Surgeons (Mr. Hugh Lett) and of several sister medical societies. After "The Memory of John Hunter" had been toasted in silence, Sir Arthur MacNalty, Chief Medical Officer of the Ministry of Health, reminded the company that the Hunterian Society was founded in 1815 and had an honourable and distinguished record. John Hunter would have desired no better memorial, though possibly, had he been at that dinner, he would have been a little surprised to see ladies present, and might have remarked, as he did to Mrs. Hunter on a celebrated occasion, "I should have been informed of 'this kick-up.'" Hunter knew the value of a medical society. He helped to found more than one, including the Society for the Improvement of Medical and Chirurgical Knowledge, an exclusive body whose membership never exceeded twelve. Sir Arthur MacNalty went on to speak of the links between the private practitioner and State medicine. The history of State medicine afforded ample evidence to refute the allegation that the State sought to drag medical practitioners at its chariot wheels. On the contrary, it was the work of private practitioners, especially in epidemiology and the prevention of disease, which began in Hunter's century, and the influence of the medical profession on public opinion, its representations to the Government on the need for more comprehensive and effective health legislation, and the appreciation of successive Governments of the value and selflessness of the work done by the profession, which had brought about State control in public health. It was not generally realized how largely private practitioners of medicine entered into the public health services. They held posts in the services concerned with public assistance, maternity and child welfare, the schools, and the post office, and 16,000 private practitioners served under the national health insurance system. Yet with all the general practitioner's statutory duties to the State and his work in public health services he remained an individualist. It was desirable that he should do so, and that the opportunity of free choice of doctor and the confidential relationship between doctor and patient should remain undisturbed, as they had done under national health insurance. Mr. McAllister, in reply to the toast of the society's health, said that its roll of membership now contained 375 names—not quite a record, but very satisfactory. In mentioning that the society offered a gold medal for competition by general practitioners throughout the Empire, he said that the most recent award, for an essay on the management of inoperable malignant disease in general practice (for which nine essays had been received, two of them from Australia), had been gained by Dr. J. E. Outhwaite of Leeds, to whom he had pleasure in presenting it. Dr. K. McFadyean proposed the health of the Lord Mayor and Corporation of the City of London, and spoke of the long association of the society with the City of London and the Mansion House in particular. The toast of the guests and kindred societies was proposed by Sir Girling Ball, who revealed that in the early post-war period the Hunterian Society was far from being in a flourishing condition so far as attendances at meetings were concerned, but it had a considerable bank balance and the suggestion for the transfer of this to some other purpose brought forward a crowd of members who had not hitherto put in an appearance, with the result that the society was re-established and became more prosperous than ever. Two responses were made to the toast, by Mr. De la Bere, M.P., and Professor Fletcher Shaw, President of the Royal College of Obstetricians and Gynaecologists, who said it was interesting to remember that the Hunterian Society was founded less than a quarter of a century after Hunter's death, and must have had as its founders many men who had personal connexions with the great surgeon. Tradition was a great factor in the ordering of a profession, and one of the things they were trying to do in his College was to lay the foundations so well that in course of time future generations might think them worthy of being known as traditions.

### London's Underground Water Supply

Records of over 1,000 London wells are described in a memoir of the Geological Survey of Great Britain on the water supply of the County of London from underground sources, issued by the Department of Scientific and Industrial Research (H.M. Stationery Office, 6s.). Over 500 of these wells are now disused, though formerly they contributed an important share of London's water. The remainder provide half a gallon of water per head per day out of the 37 gallons which the Metropolitan Water Board distributed to nearly eight million people of London, and in addition 4¼ gallons per head drawn by private owners, mainly for industrial purposes. In brief, 11½ per cent. of London County's water comes from underground sources. The memoir contains many interesting facts on the history of London's water.

In the earliest times water was drawn from the Thames and from the brooks which flowed through the growing town into the river. After 1236 water was supplied to the City in conduits from wells and springs outside the populated area, the first of these being a spring at Tyburn, on the site of what is now known as Stratford Place, Oxford Street. Additional supplies were carried in conduits from Paddington in 1471, from Hackney to Aldgate in 1535, and from Hampstead in 1549. In 1582 a pump worked by water-wheels was erected on London Bridge, and forced water from the Thames to the City. The New River System was opened in 1613. At the beginning of the seventeenth century most of the streams through the town had become choked and partly buried, and few of the public wells, such as Holywell and Clerkenwell, remained. About this time the first deep wells were opened, while in the nineteenth century supplies began to be taken from the Thames and its tributaries outside London. These external surface sources now provide the main source of London's water. The early shallow wells

were sunk in the sands and gravel which form terraces rising from the Thames. Rain, or water draining from springs in the adjacent hills—for example, from the Bagshot sands at Hampstead and Highgate—filtered through these gravels until stopped by the impermeable London clay beneath, where the water collected. When the water from the gravels became polluted, wells were sunk through the London clay to what are called the Reading Beds and Thanet Sands. These formations contained water collected from the areas where they come to the surface outside London or derived from the chalk below them. Owing to these beds standing higher at their outcrops than in the remainder of the London Basin, and to the impermeable nature of the London clay, the water in the wells was under considerable pressure, and rose in truly artesian fashion. There are areas where the Reading and Thanet sands still contain water, but to the north they are now dry. To-day the chalk below the sands constitutes the most important water-bearing bed under London. The chalk forms something like an enormous reservoir, but not all its water can be easily removed. As in the sands above, the water level is falling, in several areas rapidly. This has rendered many of the shallower wells useless. The general lowering of the water level below London is due, the memoir states, to the fact that water is being extracted more rapidly than it can be replenished by the extremely slow flow that is alone possible under the existing subterranean conditions. Pumping and the competition for water have become increasingly intense within the inner zone of London. There are now twice as many wells in operation as in 1911. What happens at the outcrop of the chalk is of much less immediate importance, but a considerable number of new wells have been bored in this situation, and are removing large quantities of water which otherwise might travel towards the centre of London. Also land drainage over the surface of the outcrop has been rendered more effective, and the amount of water available for absorption in the underground strata reduced. In addition, extensive building over the areas outside London, where the chalk comes to the surface, has diminished the catchment, thus extending outwards the distance through which the water absorbed must travel to reach the centre of the London Basin. Finally, the amount of rain contributed to the chalk and sands has been seriously decreased during recent periods of drought. Many of the factors which have reduced the level of the water are likely to continue to exert an influence in preventing the recovery of the water levels, and perhaps will further depress them.

### The British Hospitals Association and the Cancer Bill

The Minister of Health on February 7 received a deputation from the British Hospitals Association consisting of Sir Harold Pink, Major Woodhouse, Colonel Nathan, M.P., Mr. Arthur Griffiths, Mr. Jewesbury, and Mr. Orde (honorary secretary) to discuss the Cancer Bill, the Committee stage of which was taken in the House of Commons this week. The council of the association had embodied suggestions aimed at securing maximum effect from the Minister's proposals in a memorandum prepared after consultation with representatives of the Royal College of Physicians of London, the Royal College of Surgeons of England, and the British Medical Association. The Minister promised consideration of the points raised, and expressed his appreciation of the obvious desire of the Hospitals Association to help him to achieve the objects with which the Bill has been presented.

### Resignation of Professor Golla

The London County Council announces the resignation, as from March 31, of Professor F. L. Golla, director of the central pathological laboratory at Maudsley Hospital and pathologist to the mental health services, on acceptance of another appointment at Bristol. This resignation involves also his vacation of the chair in the pathology of mental diseases of the University of London, tenable at Maudsley Hospital. Professor Golla has held his position at the laboratory since he succeeded the late Sir Frederick Mott. The report announcing his resignation states that the council loses the services of an officer of outstanding scientific merit, whose place it will not be easy to fill. The council is in consultation with the University of London as to the steps to be taken to fill the vacancy.

## SCOTLAND

### New Edinburgh Professor

The Curators of Patronage of the University of Edinburgh have appointed James Rögnvald Learmonth, who is at present regius professor of surgery in the University of Aberdeen, to be professor of surgery in the University of Edinburgh in succession to the late Sir David Wilkie. Professor Learmonth was born in 1895 in Kirkcudbrightshire, and received his early education at Gatehouse-of-Fleet, where his father was head master. Later he proceeded to Kilmarnock Academy and to Glasgow University, where he graduated M.B., Ch.B., with honours, in 1921. At the same time he gained the Brunton memorial prize as the most distinguished graduate in medicine of that year at Glasgow. In 1924 he was awarded a Rockefeller medical scholarship, and spent a year at the Mayo Clinic, Rochester, Minnesota. Returning to Scotland, he graduated Ch.M. at Glasgow in 1927 and the following year was elected a Fellow of the Royal College of Surgeons of Edinburgh. He again joined the surgical staff of the Mayo Clinic in 1928 as associate neurological surgeon, and was appointed an associate professor of neurologic surgery in the University of Minnesota. In 1932 he succeeded the late Sir John Marnoch as regius professor of surgery in the University of Aberdeen. Professor Learmonth has accomplished much scientific work as a surgeon, particularly in operative surgery of the sympathetic system and of the brain and spinal cord.

### Glasgow Royal Infirmary

At the annual meeting of employee contributors to the Glasgow Royal Infirmary Mr. H. A. Kerr, one of the employees' representatives, said that the Glasgow Royal Infirmary never turned anyone away from its doors, but it was grossly overcrowded, the nurses were overworked, and the medical staff had a degree of responsibility which they should not be called upon to undertake. Income had shown an increase of £8,600, the increase in contributions from employees accounting for one-half of this. The total ordinary income had reached the record high figure of £106,000, but the ordinary expenditure had also reached a new high level—namely, £133,000. Mr. John M'Dougall said that the new rehabilitation centre would be ready for occupation by the summer, and would be one of the most up-to-date departments of its kind in the country. A new hospital was to be built in the county of Lanark, and it had been decided to form a co-ordinating committee between this and the voluntary hospitals, a scheme which might be usefully adopted in other counties of Scotland.

### Health of Aberdeen School Children

The report by the medical officer of health on the medical inspection and treatment of school children, City of Aberdeen, for 1937–8 records a very distinct growth in the incidence of infectious diseases. Actual cases among school children reached the figure of 2,316, compared with 714 for the previous year; contacts 1,909, compared with 480. Outstanding features were an outbreak of measles, and also of whooping-cough, in the spring of 1938, while cases of dysentery, mostly of the Sonne type, occurred through almost the whole of the school year. Both measles and dysentery were generally of a mild type. Figures for the individual diseases show 983 cases of measles, 454 of scarlet fever, 397 of whooping-cough, 275 of diphtheria, and 133 of dysentery. There had been no cases of dysentery during the previous year. With regard to arrangements for medical treatment of

school children, it is stated that a reorganization of the aural clinic was carried out in the course of the year. Following the transference of the clinic to the out-patient department of the Royal Infirmary at Woolmanhill, the new forms of treatment now available were instituted—namely, zinc ionization for discharging ears, displacement treatment for infection of sinuses together with antral lavage, and diastolization for hypertrophic rhinitis. Results are stated to have been most promising. Chronic discharging ears provided the largest category of cases. The next step envisaged is the investigation of all cases of deafness among school children. For this purpose a gramophone audiometer has already been bought, and it is proposed to test all the various classes in the schools with this instrument.

# Correspondence

## Coal-gas Poisoning and its Prevention

SIR,—At the Annual Meeting of the British Medical Association at Portsmouth in 1923 I read a paper entitled "Carbon Monoxide a Predisposing Cause of Pulmonary Tuberculosis," which dealt with the inhalation of small quantities of carbon monoxide over a number of years.

Samples of air taken from bedrooms in which there was an escape of coal gas from leaky taps were analysed, and Mr. Wigginton, lecturer in the Department of Fuel Technology at Sheffield University, found 0.02 per cent. of carbon monoxide in a typical sample. In this case the occupier of the bedroom suffered from the symptoms usually produced by chronic poisoning from coal gas—namely, morning headache, anorexia, shortness of breath on exertion, and lassitude.

Coal gas when inhaled in large quantities causes an increasing number of deaths yearly, chiefly suicidal. According to the returns by the Registrar-General for the year 1937 coal gas caused the deaths of 1,961 persons, and of this number 1,757 were cases of suicide. Fifty years ago coal gas was produced chiefly for illumination purposes and contained usually a much smaller percentage of CO than modern gas, which is required for heating stoves, etc. Modern gas may contain as much as 28 per cent. carbon monoxide, and is therefore very deadly in its effects when inhaled. Professor Bone and Dr. Himus (*Coal and its Constituents*—Longmans) have found that whereas nearly all the deleterious impurities have been removed from modern coal gas, there remain some sulphur compounds—carbon disulphide, carbon oxysulphide, and thiophene compounds—and carbon monoxide.

In the future the public will demand a gas free from these impurities. In 1906 Dr. Charles Carpenter, in conjunction with Dr. E. V. Evans and the late Dr. D. Gibb, by using a nickel catalyst at 450° C., successfully effected the decomposition of carbon disulphide into sulphuretted hydrogen and carbon; the former is then easily removed in the usual manner. The South Metropolitan Gas Company have used this process, on a commercial scale, at the very slight cost of a third of a penny per 1,000 cubic feet. Once sulphur is wholly eliminated it would be a comparatively easy matter to convert most of the carbon monoxide present in gas into methane by a nickel-catalytic process, making use of the hydrogen already present in gas, at moderate temperatures and pressures—thus, $CO + 3H_2 = CH_4 + H_2O$. The last outstanding reproach of gas—namely, its poisonous constituent—would thus be removed.—I am, etc.,

Birmingham, Feb. 7. E. B. HAZLETON, M.D., M.Ch.

## Lead Poisoning

SIR,—My object in writing is to contradict the statement made by Dr. R. E. Lane (February 11, p. 298) that "three stippled cells per 100 leucocytes are not abnormal." As this strikes directly at the value of the blood-film diagnosis of plumbism the point should be definitely cleared up. The late Professor G. A. Buckmaster specially investigated the matter, and wrote (*Morphology of Normal and Pathological Blood*, 1906, p. 14): "In my own preparations of normal blood, though particularly searched for this special purpose, I have never seen basophil granulations in a red disk." O. C. Gruner (*Biology of the Blood Cells*, 1913, p. 79) said "such cells are not met with in health." Professor Pappenheim (*Clinical Examination of the Blood*, 1914, p. 16) said (Dr. Donaldson's translation): "In every case it is evidence of pathological regeneration." Finally, Dr. C. E. Simon (*Clinical Diagnosis*, ninth edition, p. 24) wrote: "The question whether they [basophilic granules] ever occur in the blood of normal individuals I now reluctantly answer in the affirmative: this, however, is unquestionably very rare." Why should this great American teacher answer reluctantly? Obviously because he was not quite sure of his ground. Within recent years we know that in some manufacturing areas about one or two men per thousand are on the border of plumbism.

Nevertheless, Dr. Lane's statement is true when the blood film is stained by the crude methylene-blue process commonly used by factory surgeons. Such "stains for stippling" are not sufficiently selective for clinical use. He himself admits (*Report on Ethyl Petrol*, 1930, p. 88) that the small and fine granules are of less significance than the large. My contention is that routine stains for blood films show only these larger granules, and unfortunately sometimes miss even these, or stain only the largest, so that few are found. This was probably the case in the blood examinations on July 16 and August 5 (January 28, p. 151), and naturally explains the scarcity of stipple cells and their abrupt disappearance. Yet I accept them as punctate basophilia in an approximately normal blood, and, therefore, as presumptive evidence of lead absorption. But, after all, what is punctate basophilia? It is the earliest sign of pathological regeneration, but not the only one. It depends on cytoplasmic changes, but there are also nuclear changes which result in Cabot rings, etc. Industrialists have adopted punctate basophilia as their index of pathological regeneration, and I do not blame them for sticking to their stain. But they must not impose their standard on the clinician. The unreliable routine stains for blood films forced me to adopt a method (*Journal*, August 9, 1930, p. 213) which I have found reliable for many years, not only for the above changes but for all manner of leucocytes—in short, a general stain.—I am, etc.,

London, W.13, Feb. 11. ROBERT CRAIK, M.D.

## Vitamin D in Dietetics

SIR,—As one who has taken a special interest in "fresh" food, and in the origin and nature of vitamins and their undoubted value in practical medicine, perhaps you will allow me to refer to two recent letters on the above subject which have followed the publication in your issue of January 7 (p. 14) of the interesting paper by Miss Jessie Lindsay and Professor V. H. Mottram of King's College. The points to which I desire to draw attention are embodied in the following extracts from the letters:

(*a*) In the original paper it is stated that "the oil of herrings is credited with 10,000 international units per 100 grammes (Boas-Fixsen and Roscoe, 1937–8)," this being equivalent to 100 units per gramme, which figure is used as the basis for the recommendations made to medical practitioners by them and other scientific writers.

(*b*) In commenting on the above it is authoritatively stated by the General Manager, British Cod Liver Oil Producers (Hull) Ltd., that (*Journal*, January 28, p. 190) "herring oil caught off the East Coast of England produced during the midsummer of 1938 from fish in prime condition, tested biologically, using sixteen pairs of rats, showed only 12 international units per gramme, even though it was known from its origin to contain a significant amount of fish-liver oil from other species."

(*c*) In reply to (*b*) (January 28, p. 191) the authors of the paper reply that: "We felt it incumbent on us to quote Boas-Fixsen and Roscoe, as their figures come from an almost official compilation used by everyone in Great Britain interested in dietetics"; but they further add that the figures revealed in (*b*) will doubtless be given in later compilations!

The careful reading of the above must surely leave some practitioners with a curious sense of wonder. It may even give rise in thoughtful minds to the following queries: (1) Is the progress of medicine and dietetics not being retarded rather than advanced by the too-ready absorption of some modern "scientific" work, on which practitioners are invited to rely as a sound guide to human nutrition? (2) Do we not tend too much to neglect the proved value of "fresh" food, as that has been determined throughout the ages and still holds good? —I am, etc.,

Drem, N.B., Feb. 8. CHALMERS WATSON, M.D.

## The Nature of Viruses: An Apology

SIR,—My attention has been drawn to the fact that a theory regarding the possible nature of viruses which I put forward towards the close of the Rede Lecture for 1938, "Virus Diseases and Viruses," is not original. I had overlooked an article in *Science*, November 8, 1935, **82**, 443, in which Dr. R. G. Green of the University of Minnesota had already enunciated essentially similar views, pointing out that viruses might be regarded as micro-organisms which, through parasitism, had lost some structures and substances. To quote Dr. Green's words, "Such a virus would be a functionally complete unit of life only when immersed in living protoplasm. There it would complement its own limited vital processes with those of the surrounding protoplasm."

I much regret that Dr. Green's communication escaped my notice, with the result that I omitted to give credit to him for a prior publication of this conception.—I am, etc.,

London, N.W.3, Feb. 9. P. P. LAIDLAW.

## Fracture of the Olecranon

SIR,—I was very interested in Mr. Naughton Dunn's article on operation for fracture of the olecranon (*Journal*, February 4, p. 214). During the past year we have removed the fractured olecranon on four occasions in our fracture department, and I should like to endorse Mr. Dunn's statement that this procedure compares favourably with suture of the fragments. Eighteen months ago I first removed a fractured olecranon, and, as in Mr. Dunn's case, my hand was forced, as the fracture was comminuted. In this patient a surprisingly good result occurred with a complete range of movement, which I personally have very rarely seen in a fractured olecranon treated by suture.

Mr. Dunn stresses the difficulty of ensuring accurate alinement of the fracture. This may be obtained by a free exposure of the fragments, but frequently post-operative stiffness results. These stiff elbows do not tend to mobilize themselves so well as the stiff elbows in children, by time and active movements, and manipulation seldom improves them. The great benefit conferred by removal of the fragment is that there is never any loss of mobility, as active movements can be started in two to three weeks. Possibly the action of the triceps is a little weaker than before, but this disability is trifling. —I am, etc.,

Norwich, Feb. 6. H. A. BRITTAIN.

SIR,—Mr. Ernest W. Hey Groves (*Journal*, February 11, p. 296) warns against the treatment of fractures of the olecranon by excision of the fragment and repair of the triceps as advocated by Mr. Naughton Dunn (February 4, p. 214). Since Brookes published his excellent work on the treatment of fractures of the patella by excision of the fragments and repair of the quadriceps I, too, have treated certain olecranon fractures by a similar technique, and I can confirm Mr. Naughton Dunn's opinion of the results. The leverage action of the olecranon process appears to be less important than Albee taught us to believe, and the results are quite satisfactory.

Nevertheless, Mr. Hey Groves's warning is valuable. The operation is not an excision of the olecranon fragment, but rather a repair of the triceps tendon, and the bone excision is merely incidental to this. Unless tendon repair is first and foremost in the mind of the surgeon, and unless it is well done, the results will be as disastrous as Mr. Hey Groves forecasts. I recall two such cases where complete powerlessness to extend the elbow actively was shown by an inability to reach up to a shelf or to push away against resistance. Under these circumstances a man may be unable to raise his hat and a woman has difficulty in doing her hair. The triceps must be reunited to the shaft of the ulna without lengthening of its tendon. Where the excised fragment is small this may be possible by simple mattress catgut sutures, but if a larger fragment has been removed I believe that fascial suture is advisable. Fascia lata may be used, or two pedunculated strips cut from the triceps tendon itself, left attached at the lower end and passed through a drill hole in the ulna.

I think that there should be one other warning. Although the operation is well suited to the high olecranon fracture which detaches a small fragment, especially in older patients, it is not indicated in the low fracture which separates a large fragment and as much as one-half of the joint surface of the elbow, especially in younger patients. The fracture of the olecranon which accompanies a forward dislocation of the elbow is particularly low, and despite the slowness of repair of this fracture and the difficulty in regaining full elbow movements, I believe that excision and triceps repair would be very ill advised.—I am, etc.,

Liverpool, Feb. 13. R. WATSON-JONES.

## Fractures of the Neck of the Femur

SIR,—During a visit to the United States of America last summer I saw a number of cases of intracapsular fracture of the neck of the femur treated by William Nachlas in the Orthopaedic Department of Johns Hopkins Hospital, Baltimore. In order to reduce shock, Nachlas performs the reduction in the *x*-ray room with the aid of the fluoroscopic table, and the pin is inserted, using a

local anaesthetic, and its passage followed on the screen. No plaster-of-Paris is used, and the patients are kept in bed from three to four weeks. Good bony union (I saw the follow-up *x*-ray films) and good functional results were obtained in a series of thirty patients, ages ranging from 50 to 80, there being only one death in a male diabetic.—I am, etc.,

London, W.1, Feb. 7. J. L. BLONSTEIN.

## Bilateral Rupture of Quadriceps Tendon

SIR,—The literature is very often misleading when estimating the rarity or otherwise of some particular lesion, and this has been well seen in your correspondence columns recently. Mr. K. L. James (December 31, 1938, p. 1369), in reporting a case of bilateral rupture of quadriceps tendon, said that there appeared to be no reference in the literature to the condition. Since then several cases of this bilateral rupture have been reported in your columns (January 28, p. 190, and February 11, p. 296). In the last few weeks I operated on a man of 70 who missed the last step when descending a poorly lit staircase and fell, rupturing completely both quadriceps tendons immediately above the patellae. At the operation there was just sufficient tendon left to allow suture to be performed without it being necessary to drill holes in the patellae.

I think it highly probable that this bilateral condition is not very uncommon, but has not been thought worth reporting by most surgeons when they have met one case. It is clear from the correspondence which has been stimulated by Mr. K. L. James's report that his case is not by any means an isolated one, and we therefore owe him a debt for reporting the condition and thus indirectly drawing attention to its frequency.—I am, etc.,

London, W.1, Feb. 13. JOHN HOSFORD.

## Blood Transfusion in Obstetrics

SIR,—May I write in support of Mr. John Stallworthy's admirable article in the *Journal* of January 28 (p. 153) advocating freer use of blood transfusion in obstetrics. Since this measure has been freely employed in the Leeds Maternity Hospital our mortality in the treatment of the obstetric haemorrhages has been markedly lowered. Before the middle of 1927 reliance was placed on replacement of fluid by the methods advocated by Mr. Wentworth Taylor (February 4, p. 242). I hesitate to dogmatize as he did, but I can say that with the passing of the years we have made more and more use of intravenous infusion of saline and blood, with a satisfactory simultaneous improvement in results. The advantage of the intravenous route is the rapidity of its effect. I, like most obstetricians, have frequently seen a pulseless, apparently moribund, woman begin to pick up soon after she has begun to receive gum saline or blood. In my view subcutaneous saline is a poor substitute: absorption is slow; a very collapsed patient may die before the benefit of the saline is felt; and occasionally massive sloughing occurs beneath the skin. Rectal saline is seldom absorbed in the very shocked. What does Mr. Taylor mean when he says: "If a woman has a major loss of blood in excess of two pints the replacement of the blood prior to the removal of the placenta is a highly dangerous procedure and likely to hasten death"? And what is his evidence for the statement? If a woman with a retained placenta is still bleeding the advantage of transfusing blood is doubtful, but if haemorrhage has ceased the administration of blood improves the patient's condition, raising the blood pressure and usually diminishing her pulse rate, and so renders her fit to stand removal of the placenta. Credé's method of expression, and, still more, manual removal, may produce fatal collapse in a shocked patient. When the patient begins to recover after removal of the placenta, "attempts to transfuse are likely to retard this initial recovery." Why "attempts"? Attempts to transfuse, when performed by the transfusion-minded, are almost invariably successful, and my experience does not allow me to believe that transfusion retards recovery, as I have seen speedy improvement accompany it on very many occasions.

What are we to believe?—apparently, according to Mr. Taylor, that if improvement follows the giving of subcutaneous and rectal saline it is due to this excellent treatment, whereas "the benefits of transfusion may be highly misleading since nearly all would have recovered without." There are well-known dangers associated with transfusion, but they are virtually always avoidable. Many valuable therapeutic measures are associated with risk, especially in the hands of the careless or inexperienced: one need only instance the administration of a general anaesthetic or the performance of a major operation.

Far be it from me to criticize Dr. Solomons's excellent results in tubal gestation (214 cases without a death). I feel, however, that when there is a large quantity of free blood in the abdomen auto-transfusion is a measure which may be life-saving, and is at any rate calculated to accelerate the rate of return of the patient's blood to normal, thus cutting short her convalescence and restoring her as quickly as possible to her proper status as a healthy citizen. At Leeds Maternity Hospital we are fortunate to possess two transfusion-minded senior officers who deputize for the honorary staff. My opinion that they have saved many lives in the last three years by judicious use of intravenous gum saline and blood is not capable of proof like a problem in Euclid; nor are Dr. Taylor's pious opinions.

I consider that the emergency units for intravenous therapy introduced by Professor Farquhar Murray and criticized by Dr. Solomons are also calculated to save many lives, provided that the units are carefully chosen and opportunities to use them are not missed. This system should abolish the case of the shocked patient admitted moribund to hospital after severe haemorrhage at home and a shaking-up in the ambulance.—I am, etc.,

Leeds, Feb. 6. ANDREW M. CLAYE.

SIR,—In his excellent plea for the more liberal use of blood transfusion (*Journal*, January 28, p. 153) Mr. John Stallworthy points out that lasting benefit comes only from replacement of blood and not by the use of saline, glucose saline, or gum infusion. This I would endorse fully. In post-partum haemorrhage where the patient is collapsed, the placenta is retained, and the haemorrhage has ceased, I would strongly recommend that the time to transfuse the patient is *before* undertaking manual removal of the placenta. I consider that if this practice were followed more commonly there would be fewer deaths from retained placenta with haemorrhage. The same principle should govern the treatment of all the haemorrhages of pregnancy—namely, that where severe bleeding has occurred and is temporarily arrested the time to transfuse is *before* the necessary operative procedure.

As regards the prophylaxis of obstetrical haemorrhages I would plead for the wider recognition of the serious significance of the warning haemorrhages of placenta praevia. Such cases should be admitted to hospital

without a vaginal examination being made in the patient's home. Were these two points observed more generally the need for transfusion of blood would be less and some deaths might be avoided. Apart from radiological methods (which are certainly not 100 per cent. accurate) there is no method of diagnosing with certainty a placenta praevia except by feeling the placenta. To do so general anaesthesia and the whole examining hand in the vagina are necessary. If it is possible to feel a placenta without these then it must be so "praevia" that any vaginal examination may result in a most serious haemorrhage. The operating theatre is the place to make this examination, and before doing so preparations should be made for every manipulation which might be required, including preparations for Caesarean section. This operation will not often be necessary, but I consider it most essential to be in a position to proceed with Caesarean section with no longer delay than the time taken in changing one's gown and gloves.

Should it be decided to treat expectantly in hospital a slight ante-partum haemorrhage, the patient's blood should be grouped and a suitable prospective donor selected from relatives or friends in case the need for transfusion should arise. To neglect such precautions is to indulge in the passive observation of an impending tragedy.

Mr. Stallworthy suggests that the grouping and cross-grouping of blood should be a routine practical exercise for every medical student. So far so good, but several years may elapse between that exercise as a student and the day he becomes house-surgeon to an obstetrical unit. I should advise that the ability of each incoming resident to do so should be tested as soon as he arrives to take up duty. The man who is *au fait* with the technique may be amused, but the one who is not will appreciate it.—I am, etc.,

Carlisle, Feb. 6. ANTHONY W. PURDIE.

## Nature of Growing Pains

SIR,—It is with very great interest that I have read Dr. J. C. Hawksley's illuminating article (*Journal*, January 28, p. 155) on growing pains. Despite the vagueness of this term the author succeeded in giving a very clear clinical picture of this disease, so frequent among children and adolescents. The conclusion arrived at—that it bears no relation to articular and cardiac rheumatism—is certainly most convincing. One may also agree that it is thinkable that "growth may be directly responsible for skeletal pain in a number of cases by causing an increased strain through weight-bearing on some postural deformity, such as flat-foot, knock-knee, or scoliosis." But it must appear doubtful that this cause should account for the very great incidence of growing pains (33.6 per cent. of all children at least). Further, the raised sedimentation rate found by the author in 33.9 per cent. does indicate definitely the presence of a pathological condition and is not consistent with the view of physiological growth.

In discussing the nature of growing pains in relation to rheumatism Dr. Hawksley had mainly rheumatic carditis and articular rheumatism in mind. Now common rheumatism comprises also a large group of non-articular forms, which are very frequent indeed: according to Continental statistics of 1924 the ratios for articular, cardiac, and non-articular rheumatism were 1:3.4:22.6. The question may be asked whether there is a relation between growing pains in children and non-articular rheumatism in adults. I have published lately an article on non-articular rheumatism (*Brit. J. phys. Med.*, 1938, N.S., **1**, 302) in which it was claimed that this very frequent form of common rheumatism is a disease affecting muscles or tendons, or both, and which can be diagnosed by objective signs.

A careful study of Dr. Hawksley's article shows that the symptoms described in children bear a very remarkable resemblance to those found in adults suffering from what I called muscular rheumatism. The following points discussed by Hawksley are noteworthy: (1) localization of pain—muscles and tendons and ligaments; (2) character of pain—very nagging and severe; (3) auxiliary causes—the influence of (*a*) damp housing and damp weather, (*b*) allergic conditions (children suffering from asthma), (*c*) frequency of respiratory catarrh, (*d*) psychological maladjustment, and (*e*) vasomotor instability (autonomic imbalance).

I wish to point out that both the localization and character of pains, as well as the auxiliary causes, are the very characteristic features of muscular rheumatism in adults. Consequently one is, I think, justified in regarding growing pains in children and adolescents—infantile and juvenile myalgia—as a form of non-articular—namely, muscular—rheumatism.—I am, etc.,

London, N.W.1, Feb. 10. MICHAEL GUTSTEIN.

## Protection of Children in Time of War

SIR,—The question of the protection of children in wartime through methods of billeting, evacuation, camps, and such like is naturally one of much concern to a society like the Save the Children Fund. And it is important to realize what efforts have been and are being made to deal with the problem from an international point of view. For a long time the British Fund and the Save the Children International Union have been discussing it and, at the annual council of the latter at Geneva in April last, proposals were put forward and approved in principle by the various national societies there represented, including the British, Dutch, German, Greek, Swedish, Swiss, etc. But it was agreed that Governments would have to be consulted before any definite action could be taken.

The question again came before the International Red Cross Conference which was held in London last June, and a resolution was passed asking the International Red Cross Committee "to study the problem of protecting women and children against the suffering resulting from armed conflict in co-operation with the Save the Children International Union, and recommending the National Red Cross Societies to bring the question before their Governments after consultation with the national bodies specially concerned with the protection of women and children." In pursuance of this resolution there was formed a Joint Commission of the International Red Cross Committee and the Save the Children International Union. This Commission, assisted by legal experts, has now completed its revision of the draft Convention prepared by the Union, which applies to children only and which it is hoped some neutral country will be prepared to submit to an international conference for final approval and subsequent ratification on the model of the International Red Cross Convention.

The Convention, which is entitled "Convention for the Protection of Children in the Event of Armed Conflict," applies to all children under 15 years of age "irrespective of race, nationality, or creed, residing at the outbreak or during the period of hostilities in the territories of States engaged in armed conflict." Belligerents shall allow food, clothing, and other supplies to be sent from other countries for the benefit

of such children (Art. 2). In time of peace, or after the outbreak of hostilities, places of safety shall be established under certain conditions for the exclusive purpose of the protection of the children to be concentrated therein, and these places shall at all times and in all circumstances be respected and protected. Such protection shall include the persons who may be engaged in the care, education, and maintenance of the children, but in no case shall they exceed in number 10 per cent. of the children placed under their charge (Arts. 3–8). A distinctive sign or emblem shall be displayed over all such "places of safety" and also worn by the persons above referred to (Arts. 9–11). A list of such places of safety shall be duly notified in time of peace and shall be under the supervision and control of a commission of neutrals who shall immediately inquire into cases of alleged violation of the Convention (Arts. 12–14). Provisions are made for the adherence of belligerents to the Convention (Arts. 15–18) and for the prevention of abuses and violation (Arts. 19–21).

I think it will be generally admitted that such a Convention if observed—and its infringement would involve more universal condemnation even than a breach of the Red Cross Convention—should do something to mitigate the dangers and the horrors of war and preserve the rising generation for a future to which, it is hoped, such abominations will be unknown. No civilized Government surely can hesitate to subscribe to it or to any form which it may take after exhaustive examination and discussion. And it would serve greatly to fortify the operation of such national schemes as are now under debate, particularly as regards the marking of children's camps with the proposed international symbol and the penalties of infringement.

Is it too much to hope that the seed thus sown will before long bear fruit and the conscience of the world be aroused to the imperative necessity for doing by joint action at least as much for the safety of its children in war-time as it does in peace?—I am, etc.,

H. D. WATSON, C.I.E., C.B.E.,
Chairman, The Save the Children Fund.

20, Gordon Square, London, W.C.1, Feb. 9.

## Mechanical Respirators

SIR,—My opinion is not altered by the fact that Dr. C. L. G. Pratt has resuscitated in the *Lancet* of January 28 an invention made by Woillez in 1876. This invention is based on a well-known principle, which has been used for carrying out operations on the lung as well as by Drinker. Woillez's invention was one for saving people from suffocation, not for the artificial respiration for weeks of patients suffering from a paralysed respiratory centre. Dr. Drinker, so far as I know, was the first to design a chamber by which this can be done, combined as it is with an electrically driven pump, and having means of access to the patient, whereby the use of the bed-pan and other attentions to comfort can be given; means of hand pumping also being provided in case of a temporary breakdown of the electrical pump. I know nothing about the ethics of patenting in America, but I do not doubt that patents could have been taken out in this country for improvements for the design in apparatus for artificial respiration such as were made by Drinker. Sir Robert Davis, having acquired the first Drinker apparatus imported to England, did not seek to have it patented, but at his own expense lent it to hospitals and thereby saved life. Since then, aided by the experience of London County Council medical officers, he has sought to perfect the machine.

Lord Nuffield is making and giving away a respirator which does not differ from the Drinker machine except in that it is made of wood, and Drinker himself made his machine of wood and discarded this material for steel as safer—and rightly so, as anyone who has worked a compressed-air apparatus would agree. For the wooden apparatus, according to Professor Macintosh, a royalty has been paid. It seems to me that medical advisers of Lord Nuffield have not generously given credit to Drinker, but, by means of a search through ancient archives, have revived the forgotten invention of Woillez, by which they rather seek to refute the just claims of Drinker. They have, however, reached a conclusion that not 5,000 but 500 respirators would suffice. We know on the authority of Sir Henry Gauvain that a Drinker respirator can be used for cases with a paralysed respiratory centre only by those trained in its use, and then with the greatest care, and that the machine has to be kept always in perfect order, ready for use in cases which very rarely happen. The making of even 500 seems then to be ill advised.—I am, etc.,

St. John Clinic, London, S.W., Feb. 6. LEONARD HILL.

## Differential Fertility

SIR,—Korzybski, in *Science and Sanity*, has shown how defective for purposes of communication is a language that has been evolved in a pre-scientific age. In this connexion I should like to direct attention to a phrase in Sir James Marchant's letter on differential fertility (February 11, p. 300). Sir James says: "I have elsewhere contended (and German authority now also agrees) that at bottom we face a spiritual problem—the will to promote national survival." Now remarks of this sort, which fall readily from the lips of politicians, convey no precise meaning to the scientist. Does Sir James mean that a large population of military age (and how "large"?) enables the individuals forming the Government of a particular geographical area successfully to impose their domination on the Governments of other geographical areas, and conversely to resist attempts at domination imposed upon them? Or, for example, that a "large" industrial population with a low standard of life gives the industrialists an advantage in the competitive export of goods? Whatever meaning was intended, such evidence as there is goes to show that a general increase in fertility would be correlated with a lower standard of life and consequently a higher morbidity rate.—I am, etc.,

London, N.W.1, Feb. 11. JOHN BRAY.

## Asthma Research

SIR,—In your annotation on the work of the Asthma Research Council in the *Journal* of February 4 (p. 224) one is struck by the lack of team-work or common direction amongst those hospitals carrying out asthma research, presumably from a common fund. For instance, while King's report "excellent clinical results from extracts of mixed pollens," Guy's "this year intend to investigate the results of pollen desensitization in hay-fever." Whereas St. Mary's could probably give them all the information they could require on the subject of hay-fever without any further investigation. Another research worker, we read, "will try to produce attacks of asthma by the use [presumably by injections] of allergens to which the patient's skin is sensitive." Surely this is rather elementary and useless.

In America two deaths are reported after intradermal test injections, one with Le Page glue and the other with pollen, besides some forty deaths from the injection of

horse serum into those sensitive to it. During the routine tests by the intradermal method it is not at all uncommon to provoke an attack of asthma if the patient is excessively sensitive to the protein used. During treatment, especially with grass pollens, attacks of sneezing, asthma, and urticaria may be expected if the dose is too large. In 1920 there was a child in St. George's who gave a large reaction to cat hair. She sat with the cat on her knee for one hour late one evening and awoke at one o'clock with such severe asthma as to need adrenaline; this was the first attack she had had since admission. The production of "attacks of asthma by the use of allergens to which the patient's skin is sensitive" seems to have been already fully proved. A more interesting point for investigation is to find out why the attack took four hours to develop, as it did in this case and in the French classic the *Marchand de Mouton*, after his haemoclasic crisis was over and three and a half hours after he had left the pen of sheep.—I am, etc.,

London, W.1, Feb. 8. FRANK COKE, F.R.C.S.

# Obituary

## C. C. OKELL, Sc.D., M.B., F.R.C.P.

Late Professor of Bacteriology, University College Hospital Medical School

Dr. Charles Cyril Okell, formerly professor of bacteriology at University College Hospital Medical School and bacteriologist to the hospital, died in Cambridge on February 9 after a long illness. Born in 1888, the elder son of C. P. Okell of Douglas, Isle of Man, he was educated at Douglas Grammar School, St. John's College, Cambridge (B.A. Natural Science Tripos, 1911), and St. Bartholomew's Hospital, where he was Brackenbury scholar in medicine, Skinner, Wix, and Hichens prizeman, and house-physician. He took the English Conjoint diplomas in 1915, graduated M.B., B.Ch. at Cambridge, and became M.R.C.P.Lond. in 1921, was elected F.R.C.P. in 1932, and took the M.A. and Sc.D. degrees in 1937, having already obtained the London D.P.H. and D.T.M. and Hy. He gave the Milroy Lectures before the Royal College of Physicians in 1932 and was for some years editor of the *Journal of Hygiene*, after acting as assistant editor of the *Journal of Pathology and Bacteriology*. At the Annual Meeting of the British Medical Association at Bath in 1925 he was honorary secretary of the Section of Pathology and Bacteriology. During the war he had served in the temporary rank of captain R.A.M.C. with the 2nd and 15th Divisions in France, and with the 53rd Division in Palestine and Egypt, and was awarded the Military Cross. On returning to civil life he worked for some time on the staff of the Wellcome Physiological Research Laboratories at Beckenham, and became head of the bacteriological department in 1924.

A former colleague writes:

I first knew Okell after he had recovered from the "rheumatic" condition which hampered the end of his war work. He then joined the list of distinguished men who have worked at the Wellcome Physiological Laboratories, including Dale, Barger, Laidlaw, Mellanby, and Hartley. I write far from access to the records; Okell's solid contribution to many branches of bacteriology related to immunity and was published in a series of papers. He most vigorously carried forward the work on active immunization against diphtheria and scarlet fever which has flowed from those laboratories, notably the great gifts of toxoid-antitoxin floccules and alum toxoid. He contributed to veterinary medicine the discovery—with Dalling—that the widespread disease of dogs called "yellows" was leptospirosis. From 1930, as professor of bacteriology at University College Hospital, he quickly made fruitful investigations of clinical material. Moved probably by an earlier personal experience, he worked much at infection in hospital of patients—particularly children—and helped materially to diminish or abolish "hospital infection" in naso-oral surgery. Okell's Milroy Lectures in 1932 summarized his work and views on the tangled shreds of knowledge then available about the pathogenic streptococci, and emphasized the identity of the erythrogenic toxins of all these cocci—their other activities, leading to adenitis, infection, or pyaemia, being probably type-specific.

Okell read widely in other fields, and his fluent pen probably never pleased more than in the witty "squib"—to use his own term—in which he castigated with gentle but penetrating irony the medical writer who describes his tumour as egg-sized. Okell asked, "Whose egg—ostrich, dodo, hen, pigeon, or humming-bird?" I remember this note being appreciatively mentioned by a great transatlantic bacteriologist, who knew nothing of my relation to Okell, during a long drive in America. His pen and active brain were fully employed for some years as assistant editor of the *Journal of Pathology and Bacteriology* and as editor of the *Journal of Hygiene*.

Okell was compelled by a crippling polyarthritis of puzzling origin to resign his chair. He faced the weary months of pain and immobility with moving bravery, and met the bleakness of the future with a stable philosophy which would have been expected from his solid warm personality in earlier years; it made one friend feel with deep sadness, after each meeting, that he had been in contact with a rare spirit in a body crippled beyond repair. Bacteriology and medicine have lost much by his passing at the early age of 50.

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## H. E. ALLANSON, M.D., F.R.C.S.ED.

Dr. Herbert Evelyn Allanson of Pietermaritzburg, Natal, died at Worthing, Sussex, on February 8. His passing at the comparatively early age of 56 will be mourned by many in this country as well as in South Africa, for he was a man gifted with exceptional qualities and outstanding in his profession.

Mr. T. Twistington Higgins writes: Entering medicine earlier than most, chance brought Allanson to Manchester, where it was my privilege to be his fellow-student and to become subsequently his close friend. He was early acknowledged a leader among us, for with the keen perception of youth we were not slow to recognize behind the austere if distinguished countenance a shrewd brain and a sterling character. In council or on the football field Allanson was a force to reckon with or to rely upon, according to circumstance. After qualification he wisely prepared himself, by filling various house appointments and taking his M.D. and F.R.C.S.Ed., for the work he was destined to do in his native South Africa. Thus, well equipped he returned to Natal to settle in Pietermaritzburg, where he speedily acquired a large and varied practice. The great war found him well established, but characteristically responsive to such a call. He was seriously wounded on the Somme in 1916. Fortunately he was ultimately able to resume his work without undue handicap. Allanson must have had a very large practice. He did a great deal of surgery and gynaecology, and, as I have reason to know, did it uncommonly well. He never

spared himself, and it was only in recent years that he was persuaded to take up fly-fishing as a hobby. Periodically he indulged in trips to England, but these holidays were largely spent in operating theatres or at postgraduate lectures; always his main purpose was to go back still better equipped for his work. Such leisure as he did allow himself was devoted to reviving old friendships. To us on this side these reunions were delightful, for the preoccupations and successes of the passing years did not change him. His knowledge of the world and wide interest in humanity, coupled with his generosity of spirit and quiet sense of humour, made him at all times a charming companion. If it be true that some measure of immortality lies in the quality of the memories bequeathed to those we leave behind us, then assuredly Allanson lives on. In his allotted span he filled his measure to overflowing with good honest work well done, and of him it can be truly said that here was a man who spent himself in the service of his fellows.

Dr. Allanson joined the British Medical Association in 1912, and was president of the Natal Inland Branch from 1929 to 1931. He leaves a widow and two sons, both undergraduates at Downing College, Cambridge.

## THE LATE DR. R. C. BUIST

Dr. G. F. WHYTE writes:

Dr. Robert Cochrane Buist of Dundee passed to his honoured and well-earned rest on February 5. As one who was in close association with him for many years I wish to pay tribute to the memory of a man of outstanding ability. He was almost the last survivor of a coterie of medical men who during the end of last century and the first part of the present raised the standard of clinical teaching in Dundee to a very high level, including as it did the late Professors A. M. Stalker and J. C. Kynoch, Dr. Mackie Whyte, and Mr. D. M. Greig.

Dr. Buist was a Dundonian born and bred, and proud of his citizenship and of his native town. He was learned in the history and traditions of ancient Dundee, and one of his researches was a chronicle of all the famous doctors and chirurgeons who in bygone days practised in the town. He was a man of high intellectual and academic attainments, and it was no surprise that he was almost uniquely honoured by having conferred on him *honoris causa* the degree of LL.D. by both the Universities of St. Andrews and Edinburgh.

As an obstetrician he was held in very high repute, and his teaching and practice of midwifery were essentially sound and safe. He was very catholic in his interests, and there were many other sides to his personality and attainments. He took a high place in the medico-political world, and as a member and chairman of various committees he gave unsparing service both in the interests of the medical profession and of the general public. In Dundee we looked on him as an encyclopaedia of knowledge in everything pertaining to medical politics and ethics, and his great knowledge of procedure was often very helpful to a chairman when he found himself getting into difficulties. He was an intellectual socialist in politics, but more of the humanitarian than militant type, and up to the time of his death was devoting a great deal of his leisure to work for the relief of refugees and the provision of food and medical supplies to the poor starving people of unhappy Spain.

Lastly, I would speak of him as a companion and friend. He was a staunch friend and wise in counsel. As a companion he gave freely from the stores of a mind unusually well equipped, as he was an omnivorous reader and had a retentive memory. We'll all miss his familiar face and figure in our streets, but we'll miss even more the joy of his companionship and the wisdom of his counsel.

Dr. E. M. GLYNN WHITTLE, for many years an authority on medical jurisprudence, especially in the North of England, died on January 17. He received his medical education at Liverpool, Cambridge, Dublin, St. Bartholomew's Hospital and Paris. Having taken the M.R.C.S. diploma in 1877 and the M.R.C.P.Lond. three years later he graduated M.D. of Trinity College, Dublin, and M.D.Cantab. in 1880. Returning to Liverpool, he held various appointments, including those of medical officer to the Liverpool Maternity Hospital and medical referee for emigrants, Merseyside. He had been also a medical referee to the Liverpool magistrates for more than forty years. He had been vice-president of the North of England Obstetrical and Gynaecological Society, and contributed articles on obstetrical and gynaecological subjects to the *British Medical Journal* and other medical periodicals. A keen student of the English language, he had been president of the Liverpool Philomathic Society, his membership of which organization had extended over fifty years. He was also a member of the Liverpool Medical Institution. His firm stand in the dispute about the administration of the Liverpool Maternity Hospital evoked support from the medical profession throughout the country and ultimately led to a victory which proved to be generally satisfactory in the end. Dr. Glynn Whittle was at one time a well-known archer, and in 1903 won the open amateur handicap at the Mersey Bowmen's meeting.

Dr. ERNEST LAURIE ROBINSON of St. Peter Port, Guernsey, who died suddenly on February 5, had been a member of the British Medical Association for over half a century. He was born in the Isle of Alderney on January 11, 1855, the son of the Rev. Charles Robinson, and from Elizabeth College, Guernsey, went to study medicine in London at St. George's Hospital, qualifying as M.R.C.S., L.R.C.P. in 1876. He had been a member of the Indian Medical Service as a surgeon in the Bengal Army, and during the war of 1914–19 served as specialist surgeon to the forces in Guernsey and Alderney. Dr. Robinson was one of the founders of the Victoria Hospital, Guernsey, and surgeon to that institution for many years; he was also surgeon to St. Peter Port Hospital. In recognition of his work as a lecturer for the St. John Ambulance Association he was made an honorary member of that body and a Knight of Grace of the Order of St. John of Jerusalem in England.

Dr. ADOLPHUS HAROLD RADCLIFFE of South Milford, Yorkshire, died suddenly at his home on February 7; he had visited his patients as usual on the previous day. Born at South Milford in 1882, Dr. Radcliffe studied medicine at the Leeds Medical School and graduated M.B., Ch.B. of Victoria University in 1903, taking the D.P.H. of Manchester in 1905. After acting as house-surgeon at the General Infirmary at Leeds he began practice in his native town, and was for a time deputy medical officer of health for Selby and medical officer of the Tadcaster Isolation Hospital. Dr. Radcliffe had been a member of the Leeds Division of the British Medical Association since 1910, and also belonged to the Leeds and West Riding Medico-Chirurgical Society. He was a keen member of the Badsworth and Bramham Moor Hunts, and in politics a strong Conservative. He leaves a widow and one daughter, who is studying medicine at Leeds.

Dr. JOHN WALKER WOOD of Tunbridge Wells died on December 10, 1938, after a career largely devoted to aural surgery. Born in Edinburgh fifty-eight years ago, his school education was received first at Dunfermline and later at Edinburgh. In the last-named he passed from Daniel Stewart's College to the Medical School of the Royal College of Surgeons, intending to become a dental surgeon like his father before him. In 1902, when he was only 21, he qualified L.R.C.P. and L.R.C.S.Ed. and L.R.F.P.S.Glas. with first-class honours. He then decided to specialize in otology, rhinology, and laryngology, and after postgraduate work became house-surgeon at the

Central London Throat, Nose, and Ear Hospital. He then worked with Charles Heath until the outbreak of war. Invalided home with malaria, he was appointed an assessor under the Ministry of Pensions, and then acquired a specialist practice in Tunbridge Wells, in which he continued until his death. He was aural surgeon to the Kent and Sussex Hospital, the Kent County Schools in Tunbridge Wells, and consulting aural surgeon to the Edenbridge and Crowborough Cottage Hospitals. Dr. Walker Wood belonged to the British Medical Association for twenty years, and was held in high esteem by his colleagues as a skilful consultant and a good friend. He is survived by his widow.

# Medico-Legal

## "CONSOLIDATED WORLD RESEARCH" IN THE COUNTY COURT

Many doctors have doubtless received advertisements of an encyclopaedia published by a concern which calls itself "The Consolidated World Research Society," and some of them are known to have parted with money for this publication. Dr. Archibald Penman recently sued the society in the Westminster County Court, claiming the return of £19 10s. paid for the society's encyclopaedia on the ground of fraudulent misrepresentation by a Mr. Hamer, the agent of the society. He said in evidence that he had received a letter from the head office appropriately dated April 1. Mr. Hamer had made an appointment by telephone, and at the interview had given him to understand that the encyclopaedia was a medical one. Mr. Hamer had produced a list of persons, saying that they answered questions in connexion with the research facilities, which the subscriber obtained in addition to the encyclopaedia. Dr. Penman knew two of the names, and he was told that these persons answered research questions, and was shown what was alleged to be an answer given by an eminent consultant. He said the encyclopaedia contained only general knowledge tests for juveniles. The defendants in their reply said that the list was not one of consultants, but of persons who would be willing to give satisfactory references. They produced two lists, and suggested that any person who looked at them would realize that the encyclopaedia was not a medical encyclopaedia, as many of the names were not those of doctors. List A contained many non-medical names, but List B contained only medical and dental names, with one exception—that of a doctor of divinity. The judge, Sir Mordaunt Snagge, said in his judgment that the onus of proof rested on a person who alleged fraud, and proof must be definitely established to the satisfaction of the court. He referred to the principle laid down by Lord Halsbury in Aaron's Reefs, Ltd., *v.* Twiss (1896, A.C. 273):

"If by a number of statements you intentionally give a false impression and induce a person to act upon it, it is none the less false although, if one takes each statement by itself, there may be a difficulty in showing that any specific statement is untrue."

He said that, taking the matter as a whole, he was of opinion that Mr. Hamer made material representations, which were intentionally untrue to his knowledge, for the purpose of inducing Dr. Penman to enter into the contract. He therefore rescinded the contract and ordered repayment to Dr. Penman of his money.

Perhaps this case will serve as a warning to doctors who would not have been deterred by previous remarks which we have made from time to time about this concern. No doubt several have preferred to suffer in silence. Dr. Penman was assisted by the London and Counties Medical Protection Society, and doctors should remember that such assistance is part of the service which medical defence associations give their members.

## MEDICAL "PRIVILEGE" REFUSED

At a recent examination before the Bradford magistrates[1] the police charged a 20-year-old woman with using an instrument on herself with intent to procure abortion. They summoned Dr. Violet Glover, who had attended the woman, to give evidence against her. On entering the witness-box Dr. Glover said: "I wish to protest against giving evidence in this case. What I have to tell was communicated to me in confidence by the defendant in my professional capacity as a doctor, and I will refuse to give evidence unless I am forced to do so." The stipendiary magistrate, Dr. F. J. O. Coddington, asked the prosecuting solicitor whether it was necessary for Dr. Glover to give evidence. He allowed her to stand down until the other witnesses had been heard, and then said that if the prosecution insisted on her giving evidence he was bound to order her to do so. He had great sympathy with any doctor or priest who protested against revealing publicly some confession made to him in his professional capacity, and he would be very glad to see the law altered accordingly. The solicitor remarked that it would be a difficult position if every doctor refused to give evidence or had the right to refuse to give evidence, and called Dr. Glover. She gave evidence, and the accused was committed for trial at Leeds Assizes.

# Universities and Colleges

## UNIVERSITY OF CAMBRIDGE

Sir Henry Dale, M.D., F.R.S., Director of the National Institute for Medical Research, has been elected an honorary Fellow of Trinity College.

During the month of January titles of the degrees of M.B., B.Chir. were conferred by diploma on Mrs. E. F. Graham Kerr, J. M. E. Hannaford, and M. Lloyd (Newnham College), and of M.B. on Mrs. D. K. Souper (Newnham College).

At a Congregation on February 3 the following medical degrees were conferred:

M.B., B.CHIR.—B. E. Miles, J. S. Phillpotts, H. St.C. C. Addis, D. O. Walker.

### *Scholarships for Medical Research*

With the object of encouraging original medical research the Court of the Grocers Company will offer one scholarship each year tenable for two years of the value of £300 for the first year and of £450 for the second year. Candidates must be British subjects under 35 years of age. Applications must be made by the middle of April. Forms of application may be obtained from the clerk of the Company, Grocers' Hall, Princes Street, London, E.C.2. Further particulars may be seen at the University Registry, Cambridge.

## UNIVERSITY OF LONDON

Three lectures on "The Submicroscopic Morphology of Protoplasm and its Derivatives" will be given by Professor A. Frey-Wyssling of Zürich at University College, Gower Street, W.C., on March 6, 7, and 9, at 5.15 p.m. The lectures, which will be illustrated with lantern slides, are addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

## UNIVERSITY OF SHEFFIELD

R. S. Kennedy, M.B., Ch.B., D.P.M., has been appointed Lecturer in Mental Diseases, and Professor J. Rennie has been appointed Representative of the University at the Congress of the Royal Sanitary Institute at Scarborough, July 3 to 8.

A special degree Congregation will be held on March 20 at 12 noon.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council was held on February 9 with the President, Mr. Hugh Lett, in the chair.

Dr. Royal Whitman of New York was admitted to the Honorary Fellowship of the College.

It was reported that at the recent Primary Examination for the Fellowship held in Cairo ten out of twenty-seven candidates were approved.

[1] *Times*, February 4.

It was reported that the Lister Memorial Lecture will be delivered by Professor René Leriche of Strasbourg at the College on April 5.

*Diplomas*

A Diploma of Fellowship was granted to Herbert Cecil Perera Gunewardene of Ceylon and St. Bartholomew's Hospital.

Diplomas of Membership were granted to F. T. Birkinshaw, H. Harris, J. J. H. Lowe, and to the 205 candidates whose names were given in the report of the meeting of the Royal College of Physicians of London in the *Journal* of February 4 (p. 249); as were the names of the fifteen candidates who have been granted Diplomas in Public Health; the names of the three candidates who have been granted Diplomas in Tropical Medicine and Hygiene; and the names of the forty-eight candidates who have been granted Diplomas in Anaesthetics, all jointly with the Royal College of Physicians of London.

Diplomas in Medical Radiology were granted, jointly with the Royal College of Physicians of London, to G. A. Amm, M. Israelski, F. H. Kemp, and J. French.

The Council accepted with grateful thanks the offer of the *British Journal of Surgery* to secure for the College Library, by exchange of the journal, those special journals and periodicals dealing with surgery which are necessary for a complete collection of current surgical periodical literature.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The title of the Milroy Lectures to be given by Dr. Donald Stewart is "Industrial Incapacity and Modern Medicine," and not as printed in this column on February 11 (p. 310).

# Medical Notes in Parliament

The House of Commons this week passed the Cancer Bill through committee and also discussed education, unemployment, and other subjects. The Czecho-Slovakia (Financial Assistance) Bill and the Prevention of Frauds (Investments) Bill were advanced.

A Bill to amend the Official Secrets Act, 1920, was introduced in the House of Lords by the Government.

## Blood Tests in Affiliation Cases

In the House of Lords on February 8 Lord MERTHYR moved the second reading of the Bastardy (Blood Tests) Bill. This Bill was introduced into the House on November 23 last, and was the subject of a leader in the *British Medical Journal* of December 10 (p. 1210). A memorandum on the Bill was published in the *Supplement* of that same issue at page 362.

Lord MERTHYR said that in 1937 4,267 paternity orders were made and Justices had few more anxious or difficult tasks than making or refusing an order in bastardy. Forty years ago nothing was known about any difference in the grouping of human blood, but since then many discoveries had been made. Blood could now be divided into twelve groups or types, each distinct from the other. It had been found that these groups were present in the blood of a human being from before birth until after death. In a very small number of cases the group was not apparent in a child until it was some months of age, but it was apparent sooner or later, and the worst that could occur would be that the test would have to be postponed for a short time. The use of the blood test was limited. By its means they could never show that a man was the father of a child, but they could show, in a certain number of cases—roughly from 10 to 15 per cent.—that the alleged father was not, in fact, the father. It had been found from results all over the world that out of every three accused men who were in fact innocent of being fathers, one could be exonerated by this method. In Germany the test had been employed in the courts in 5,000 cases before 1928, and in at least twelve other countries it was employed legally. In at least two American States it was used legally, and in many others legislation was pending. This Bill would bring these tests to the courts of law in England and Wales.

Clause 1 said that the court may, and at the request of either party shall, order a test to be made of all three parties to the case. If in any case the mother desired a test she should have it. Only in a small proportion of cases would it suffice to test only the father and the child. Therefore it was proposed that the test should uniformly take place in respect of all three. If the mother should refuse, the court might dismiss the application. Clause 3, Subsection 3, enabled a certificate of a pathologist to be accepted as evidence in a court of law. There was a precedent for this in the Food and Drugs Act, 1928, which had justified itself. To-day if a blood test was undertaken it was necessary to call as a witness the pathologist who actually made the test. He might have to travel the length of the land to give evidence lasting about five minutes. Clause 5 dealt with rules which, it was suggested, should be laid down for the conduct of the tests and for the taking of the actual samples. Clause 6 provided that these tests should be made by "approved" registered medical practitioners. A possible amendment might be made to this Bill in committee applying it not only to courts of summary jurisdiction but to all courts.

### SOME INVESTIGATIONS OF BLOOD TESTS

Viscount DAWSON OF PENN said there was hardly any subject in medicine which had been so thoroughly studied as this of the qualities of the blood. He explained the theory of the blood groups, and said that tests made by fifty independent observers spread over the civilized world on a total of 8,717 families with 19,089 children had proved two propositions. The first was that neither quality A nor quality B could appear in any child unless that quality was present in one or both of the parents. To that proposition there was no exception whatever. The second proposition was that the combination of AB parents with O children or of O parents with AB children was impossible. In a more recent study 10,092 mothers were taken and 12,943 children. In that second investigation no single exception was found. How often in the scientific world did they get such a definite conclusion supported by numbers of different observers? A theoretical computation was made of the frequency with which a quality that appeared in the parent reappeared in the child under the Mendelian law. The computed results were nearly identical with the actual observations he had just mentioned.

It must be admitted that this test was of limited application. It could only prove the negative. As to the performance of the test, it was the simplest thing done in everyday practice. It was becoming increasingly the practice to take specimens of blood from people who were not well. It merely consisted in pricking with the needle the finger or ear and taking one drop of blood. Any doctor could take that drop as part of his everyday routine. There was no teaching centre or hospital of the first importance in this country without a pathologist who was able to perform the test. He commended the Bill to the support of the House.

Lord Raglan and Lord Atkin supported the Bill.

### LORD CHANCELLOR'S DOUBTS

Lord MAUGHAM said the Government would not attempt to prevent the second reading being carried. There were between 6,000 and 7,000 of these cases in the courts throughout the country every year of which 1,000 roughly were dismissed. It was difficult to tell in how many cases there was really such doubt that the test suggested would be of real value. Would the safeguards for which Lord Dawson vouched from his experience always be taken, and was there not a chance that in a certain proportion of cases there would be mistakes made? He (the Lord Chancellor) had the greater reason for thinking that that was not an impossible view inasmuch as the eminent pathologists who had been advising the Home Office had suggested that, when the tests taken by one of the approved persons under the Bill had resulted in the fact that the blood of the alleged father was such that he could not have been the father, then it was suggested that there should be a further sample of the three bloods taken and sent to another institute to obtain an independent check. A mere suggestion of this sort by eminent pathologists was enough to lead one to the conclusion that the first test by the approved person might be of a doubtful character. And if

there had to be a second test the trouble and expense and delay would be greatly increased.

It might be found that there was a species of conscientious objector to having blood tests taken on their babies. These were matters which had to be considered. The question of identity was by no means so easy as might be thought. No doctor would, of course, be at the court at the time, and the girl, baby, and man would have to go to some professional man in, he supposed, the town where the proceedings were being conducted to have the test taken. They had then to be assured that it was the right woman, the right baby, and the right man who went. When the blood had been extracted by some person who was a medical practitioner it had to be properly marked and labelled to the pathologists who were going to make the necessary examination. He was told there were perhaps four or five places where that could be done by most eminent people.

The matter ought to be carefully considered by a Select Committee, which would investigate the number of cases in which the test would be useful, the risk that sometimes mistakes might be made, the identity of the persons from whom the blood was taken, and the total cost that might be thrown on public funds. He did not pledge the Government to any particular view as a result of the inquiries of the Select Committee. As for what Lord Dawson had said, he was perfectly willing to accept his scientific view as completely reliable.

The Bill was then read a second time and referred to a Select Committee.

The Bill does not apply to Scotland or Northern Ireland.

## Workmen's Compensation

Mr. ARTHUR HENDERSON on February 8 moved that, while welcoming the appointment of a Royal Commission to inquire into workmen's compensation, the House was of opinion that the urgent necessity for an immediate increase in the amount of compensation payable was abundantly clear and should be enacted without delay. He said the present system of workmen's compensation was extravagant in its cost, wasteful of human health, and frequently engendered distrust on the part of the workmen towards members of the medical profession.

Sir ARNOLD WILSON moved an amendment urging the commission to proceed quickly with its work and to consider the issue of an interim report on the more urgent questions, including the rates of compensation. He said fatal and non-fatal accidents were increasing both relatively and absolutely. Every fifth or sixth person who met with a non-fatal accident in industry was a juvenile, and of all accidents in lifts and hoists half were in young persons. The important thing was not to give every workman more cash compensation but to provide for complete medical treatment free of cost. Although employers and workmen paid for national health insurance an injured workman could not draw any cash benefits or receive convalescent treatment, artificial limbs, *x*-ray treatment, or massage from an approved society. Vocational rehabilitation had been tested by large firms, who found themselves able to employ in their works nine out of ten persons, however severely injured. Some large firms who carried on their own insurance paid full, or at least three-quarter, wages and the whole cost of rehabilitation. They found that the men got back to work quicker. The Miners' Welfare Fund had done much towards providing surgical appliances, etc., and he thought all great industries should organize themselves in the same way.

Mr. GEOFFREY LLOYD replied to the debate. He said there was a great need for making secure provision that workmen's compensation was paid into the pockets of the persons who needed it. Under the present system of workmen's compensation there was no machinery directed to secure that the men got back to work as they wanted to do in a reasonably quick space of time. One point was the importance of treating fracture cases, which formed a high proportion of industrial accidents, in modern fracture clinics. More was needed in many cases, especially for men going back to heavy industrial work. The extra treatment necessary was partly physical and partly psychological. A man who left the fracture clinic should have graduated physical exercises under medical supervision for the injured part. Light work would do good if properly supervised, but when a man normally engaged in heavy manual labour was given light work of a sedentary nature that was not what was needed to restore his working capacity. It was very important that curative measures should be attached to the workmen's compensation system. This involved the provision first of fracture clinics, and secondly, perhaps, of rehabilitation centres.

Mr. JAMES GRIFFITHS said that in the village of Ammanford among persons applying for public assistance were seventeen cases of silicosis, two of fractured skull, and four of nystagmus. Other persons suffering from fractured leg, fractured pelvis, and fractured arm were receiving public assistance although also in receipt of weekly compensation, which in thirty-seven cases averaged 19s. 5d. per week.

On a division Mr. Arthur Henderson's motion was defeated by 135 to 134.

## Cancer Bill

The committee stage of the Cancer Bill was taken in the House of Commons on February 13. On Clause 1 (Duty of local authorities) Sir HENRY MORRIS-JONES moved to insert words to provide that the duty of the council of every county and county borough in England should be to make arrangements to secure facilities for "investigation" as well as for the treatment of persons suffering from cancer as already provided in the Bill. He said cancer was not always easy to diagnose, and he was anxious that medical men should be able to send cases to hospital for investigation as well as for treatment.

Dr. ELLIOT did not object to the amendment, but said the point could be better met under Subsection 2 of the same clause.

Sir Henry Morris-Jones withdrew his amendment.

### A NEW ADVISORY BODY

Dr. ELLIOT moved to delete the provision that before submitting arrangements to the Minister a council should consult the Radium Commission. He said that on second reading the House had shown a desire that it should cover cancer problems generally, and that consultation should take place between those engaged in every aspect of the treatment of cancer and should not be limited to the radium treatment of the disease. On consideration he had decided to omit specific consultation with the Radium Commission. It was desirable, however, that the Minister should have the best technical opinion. He therefore proposed to appoint a subcommittee of the Medical Advisory Committee to advise him on general principles in regard to the treatment of cancer and to consider any questions referred to it by the Minister. This subcommittee would include experts in surgery, medicine, gynaecology, radiotherapy, pathology, and public health administration. It was inadvisable for local authorities separately to consult this committee. It would be much better that a local authority, when drawing up a scheme, should consult anyone whose advice it wished to have, such as representatives of voluntary hospitals and medical practitioners. There was no reason why a local authority should not informally consult the Radium Commission, but the statutory consultation should be merely with the hospitals and medical practitioners. He hoped his plan would meet the fear of some members that radium was given too prominent a place in the Bill and the fear that local authorities were going to be placed under a technical commission. There need be no fear that the Minister would not take advantage of all technical opinion and not merely that of radium experts.

Sir FRANCIS FREMANTLE said the amendment would considerably change the Bill. The Minister's proposal to leave out the emphasis attached to radium was valuable. But he himself had an amendment which proposed a very different committee from that suggested by the Minister. He hoped the subcommittee would be required to report direct to the Minister. He agreed with the elimination of the Radium Commission from the Bill so long as that Commission would be recognized as a body of the highest order and its opinions would be properly considered.

Mr. GRAHAM WHITE and Colonel NATHAN both approved the removal of the provision concerning the Radium Commission from the Bill. The latter said the voluntary hospitals thought it desirable that as administrative bodies they should have representatives upon any committee which the Minister set up for his guidance. Local authorities under the Bill would have a statutory right of access to the Minister, whereas voluntary hospitals would have no direct access, although they had to be consulted by the local authorities. Dr. ELLIOT said he could not pledge himself to a consultative committee for the voluntary hospitals, but he would have full discussions with them on any matters which concerned them.

The House agreed to the amendment.

#### REPRESENTATION ON THE SUBCOMMITTEE

Mr. WHITE moved to provide that the Minister should consult a national council representative of physicians, surgeons, radiologists, pathologists, and biochemists. He said a committee should be available which would make effective all methods new and old in the treatment of cancer. A body with greater prestige than a subcommittee would be more efficient. He did not wish to discourage the subcommittee as proposed by Dr. Elliot, but he hoped the Minister would see there were representatives upon it of the interests enumerated in his amendment.

Sir FRANCIS FREMANTLE pointed out that Mr. White's amendment omitted from the proposed council the gynaecologists and the physicists. One organization which should be represented on the proposed body was that of the general practitioners, the people who were really going to carry on the work. It might be that general practitioners would be included in the subcommittee; there had been consultations between Dr. Elliot and the British Medical Association, and Sir Francis hoped that the Association had proposed the inclusion of the general practitioner. Mr. HERBERT MORRISON said that if local authorities had to satisfy not only the Minister but some national committee representing professions the work of those authorities would be gravely injured. The Bill properly proposed that before the local authority prepared a scheme it should consult local voluntary hospitals and the local medical profession.

Dr. ELLIOT said Mr. White's amendment ran counter to the decision already taken by the committee to omit from the Bill a statutory provision for consultation. A great deal of the consultation which Sir Francis Fremantle desired took place now in the Ministry of Health. The wider consultation which he advocated would be secured by dovetailing the proposed subcommittee on cancer and the Medical Advisory Committee, because that body included the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the President of the Royal College of Obstetricians and Gynaecologists, the Chairman of the Council of the British Medical Association, and others. Therefore the general review would be secured. The Cancer Committee would have the right of access to the Minister, and this would obviate delay.

The amendment was withdrawn.

#### TREATMENT OF PATIENTS FROM OTHER AREAS

Mr. HERBERT MORRISON moved to insert a proviso that nothing in the proposed arrangements should oblige a council to make any payments to the governing body of any voluntary hospital in respect of the diagnosis or treatment of cancer in that hospital, or to defray any expenses in relation to any person resident outside the area of the council. He said it was important that assistance to voluntary hospitals for work under the Bill should be concentrated on those hospitals which could do that work effectively.

Dr. ELLIOT said he would do nothing to throw work to a voluntary hospital which would be incapable of properly performing it. The interest of the patient must be the only one considered. There was nothing in the Bill to suggest any obligation to provide treatment to persons outside the area of the local authority.

Colonel NATHAN said it was impossible for a voluntary hospital to refuse to treat a patient just because he came from outside the area of the council which had jurisdiction over that hospital. Voluntary hospitals should have some means of recovering the cost of treatment of such patients from outside authorities. Sir FRANCIS FREMANTLE said he was concerned with the counties and county boroughs which could not provide arrangements for the treatment of cancer. The scheme of the Bill must be confined to a few centres. Were the people in the smaller counties to be left out of the scheme, or were the particular areas favoured by Parliament in the distribution of radium to be compelled to cover the less favoured areas?

Dr. ELLIOT pointed out that Clause 1, Subsection 2*b*, provided that each council must submit arrangements for the treatment of cancer either in its own hospitals or in hospitals maintained by other councils or local authorities, or in voluntary hospitals. That meant that a person in a remote county would come under the Bill, and an authority of such a county might discharge its duty by making provision for treatment outside its boundary and for paying travelling expenses for persons so treated.

Mr. HERBERT MORRISON said that if a voluntary hospital was within the administrative county of London the county council was not going to be landed with the cost of the patients in such a hospital no matter whence they came. He suggested that the matter should be looked into further before the report stage. Dr. ELLIOT agreed to do this, and the amendment was withdrawn.

On the question that the clause as amended should stand part of the Bill Mr. SILKIN asked if the Minister was prepared to recognize home nursing in the arrangements submitted to him for approval under the clause. Dr. ELLIOT said the Bill did not give power to establish a domiciliary medical service, and he thought that prohibition would also apply to domiciliary nursing service. He did not think there was any intention of precluding the follow-up visit of a nurse to a patient or some investigation by a medical practitioner of a patient's progress. The desire of all was that in the final stages of cancer treatment should be given in hospitals.

#### ADVERTISEMENTS OF CANCER TREATMENTS

The clause as amended was then agreed to, as was Clause 2 (Financial Provisions) and Clause 3 (Loans to the National Radium Trust). On Clause 4 (Prohibition of certain advertisements) there was prolonged discussion. Sir DONALD SOMERVELL said in the Bill as introduced the main and substantive offence was placed on the originator of an advertisement for the cure of cancer. He and Dr. Elliot agreed to a strengthening of the clause. Amendments were made accordingly.

An amendment was accepted on the motion of Sir Donald Somervell to insert that the privilege given to advertisements published only for the information of registered medical practitioners, registered nurses, registered pharmacists, and other cognate classes should only extend when publication was merely made "so far as was reasonably necessary to bring it to the notice of" these classes.

On the motion of Mr. STOREY an amendment was accepted exempting from proceedings for publication of a cancer advertisement any person who could show that the advertisement was published in such circumstances that he did not know and had no reason to believe that he was taking part in the publication thereof. Mr. GARROD JONES suggested that this provision might give protection if an advertisement instead of expressly advertising a nostrum for the cure of cancer advertised something for the cure of tumours.

Sir DONALD SOMERVELL said the offence established in the clause was the publication of any advertisement referring to any article in terms calculated to lead to its use in the treatment of cancer. These words were sufficiently wide to cover the case where, although the word "cancer" was not used, the mind of the ordinary public was directed to the treatment of that disease. Mr. Storey's amendment was agreed to and the clause added to the Bill.

Drafting amendments were made in Clause 7 (Application to Scotland), and the Bill with amendments was ordered to be reported to the House.

Mr. BERNAYS told Mr. Leach on February 13 that advertisements offering to treat persons for cancer were now seldom or never inserted in the public press.

# Medical News

A special course of lectures primarily intended for surgeons on "The Treatment of War Wounds and Air Raid Casualties" will be held at the British Postgraduate Medical School during March. The lectures will be held at 5.30 p.m. every day except Saturdays and Sundays from March 6 to March 24. The following are the lecturers: Colonel J. M. Weddell, Colonel E. M. Cowell, Dr. Janet Vaughan, Mr. G. Gordon-Taylor, Professor G. E. Gask, Mr. St. J. D. Buxton, Mr. C. H. Frankau, Mr. P. H. Mitchiner, Mr. C. Max Page, Mr. G. Jefferson, Dr. A. E. Tudor Hart. The fee for this course is £1 1s. Applications for tickets should be addressed to the Dean, British Postgraduate Medical School, Ducane Road, London, W.12.

The Christine Murrell Memorial Lecture will be given by Professor Winifred Cullis, C.B.E., D.Sc., on Monday, March 6, at 5 p.m., at the Christine Murrell Memorial Unit, Sieff Hall, Salisbury Street, Lisson Grove, N.W. As only 150 invitations can be issued for this lecture early application is advisable. Invitation cards free from the Honorary Organizer, 2, Abbey Road Mansions, N.W.8. Professor Cullis's lecture will be an introduction to a series of lectures on problems of sex education to be given in the above hall on March 13, 20, and 27, and April 3, at 5.30 p.m., by Dr. Doris Mart, in co-operation with the British Social Hygiene Council.

A dinner arranged by the Glasgow and Aberdeen Universities North-East of England Club will be held at Royal Station Hotel, Newcastle-upon-Tyne, on Friday, February 24, at 7.30 p.m., when the guests will be Mr. James Fitzjames Duff, Vice-Chancellor of the University of Durham, Mr. William Hamilton Fyfe, Vice-Chancellor of the University of Aberdeen, and Dr. E. P. Cathcart, Regius Professor of Physiology in the University of Glasgow. All graduates of the above universities will be welcome. Tickets (10s.) may be obtained from Professor D. Burns, King's College, Newcastle-upon-Tyne.

The new term at the Royal London Ophthalmic Hospital (Moorfields) begins on March 1, not on March 3 as stated incorrectly in an advertisement last week.

The Hunterian Oration will be delivered before the Hunterian Society at the Mansion House, London, on Monday, February 27, at 9 p.m., by Mr. Cedric Lane-Roberts, on "A Plea for the Woman in Gynaecology and Obstetrics."

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, February 23, at 8.30 p.m., when a paper will be read by Mr. D. Harcourt Kitchin on "The General Medical Council."

The annual general meeting of the Medical Peace Campaign will be held in the Hastings Hall, B.M.A. House, Tavistock Square, W.C., on Wednesday, February 22 (coffee 8.30). The president, Professor John Ryle, will take the chair at 8.45 p.m. The following members of the Advisory Council hope to be present: Dr. William Brown, Mr. W. McAdam Eccles, Lord Horder, Dr. Ernest Jones, Dr. E. P. Poulton, Dr. Janet Vaughan. The presidential address will be followed by discussion on the food situation in Spain, introduced by Dr. Vaughan.

The coming Easter cruise, organized by the *Bruxelles-Médical*, will leave Marseilles on March 31, and those who take part will visit Port Said, Cairo, Assouan, Luxor, the price being £65 for a first-class ticket and £54 for a second-class one. Full details of the proposed programme may be obtained from the Croisière "Bruxelles-Médical," Boulevard Adolphe-Max 29, Brussels.

A quarterly meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, W., on Wednesday, February 22, at 2.30 p.m., when Dr. D. R. MacCalman will read a paper on "The Present Status and Functions of the Child Guidance Movement in Great Britain and its Possible Future Developments." The subsequent discussion will be opened by Dr. W. Moodie, Dr. Mildred Creak, and Dr. W. J. T. Kimber. At 8.30 p.m. the same day a joint meeting of the Association and the Medical Section of the British Psychological Society will be held at B.M.A. House, Tavistock Square, W.C., when there will be a discussion on "Mental Nursing."

The Board of Control, with the approval of the Minister of Health, has appointed Mr. Leslie B. Patrick, M.B., F.R.C.S.Ed., M.C.O.G., as honorary consulting gynaecologist in connexion with diseases occurring amongst the mentally defective patients at the Rampton State Institution, Retford, Nottingham.

## EPIDEMIOLOGICAL NOTES *

### Diphtheria and Scarlet Fever

For the first time this year a decline has been observed in the notifications of diphtheria in England and Wales; compared with the expected value based on the median value for the corresponding weeks of the last nine years the figure has dropped from 97 per cent. to 94 per cent. In London an even greater decline occurred—from 62 per cent. to 56 per cent. On the other hand deaths from diphtheria have risen both in London and in the country as a whole, due to the lag-interval of a week or more which elapsed between notification and death. In a small minority of cases death may follow at an interval of some weeks from neuritic complications. The fall in the notifications of scarlet fever in England and Wales recorded last week continues, but at a slower rate, being 70 per cent. of the expected value, compared with 71 per cent. last week and 74 in the previous week. In London the decline was much more striking, the value for the week being 53 per cent. of the expected value, compared with 68 per cent. last week.

### Influenza

The incidence of influenza declined in the last two weeks of January in Great Britain, Hungary, Germany, and Switzerland, but the disease in a mild form is prevalent in Ireland, Denmark, and the Netherlands.

In England and Wales notifications of pneumonia (influenzal and primary) fell, during the week ended February 4, from 1,507 to 1,435 (in London from 151 to 125), while deaths ascribed to influenza rose from 173 to 210 for the whole country. In Scotland and Eire small increases in notifications were observed, but there were fewer deaths from influenza. At the time of going to press reports have come to hand of a second wave of influenza which appears to conform in symptomatology and its effects with the classical description of that recently encountered, which was commonly referred to as "influenzal cold or febrile catarrh"; present data on the periodicity of influenza are inadequate to permit of a prediction as to the magnitude or severity of the second wave.

In Hungary complicated cases of influenza fell during the week ended February 4 from 424 to 264 for the whole country, and from 62 to 31 in Budapest. In Switzerland during the week ended January 28 2,783 cases of influenza were recorded at Basle, compared with 4,758 in the previous week; of these 776 cases were at Zürich and 345 at Lucerne. Epidemic "foci" were also notified in the cantons of Basle-Land, Valais, and Aargau. On the other hand, in Copenhagen notifications rose during the same week from 1,525 (1 death) to 2,433 (5 deaths).

### Yellow Fever

In the *Weekly Epidemiological Record* of the Health Section of the Secretariat of the League of Nations in a review of yellow fever in Africa in 1938 it was shown that all the cases notified in Africa during the year occurred north of the Equator, west of longitude 20° East of Greenwich and south of 15° North latitude. Of the total 68 cases notified 33 occurred among Europeans. No cases were encountered in certain endemic areas in which protection tests indicated a high degree of immunity in the population.

No. 5.

# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended February 4, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for :* (a) The 126 great towns (125 in 1938) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

| Disease | 1939 | | | | | 1938 (Corresponding Week) | | | | | 1930-38 (Median Value Corresponding Weeks) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (a) | (b) | (c) | (d) | (e) | (a) | (b) |
| Cerebrospinal fever | 37 | 6 | 9 | | 1 | 34 | 3 | 13 | 4 | — | | |
| Deaths | | — | 1 | | | | 1 | 2 | | | | |
| Diphtheria | 1,241 | 115 | 180 | 49 | 24 | 1,874 | 204 | 265 | 58 | 43 | 1,316 | 204 |
| Deaths | 33 | 7 | 5 | 4 | — | 37 | 4 | 6 | 1 | — | | |
| Dysentery | 19 | 3 | 9 | | 1 | 215 | 50 | 144 | | — | | |
| Deaths | | | | — | — | | | | — | — | | |
| Encephalitis lethargica, acute | 4 | — | 1 | | — | 1 | — | 1 | | — | | |
| Deaths | | 1 | | | | | 1 | | | | | |
| Enteric (typhoid and paratyphoid) fever | 20 | 3 | 8 | 5 | 3 | 69 | 2 | 5 | 8 | 1 | 38 | |
| Deaths | 3 | — | — | 1 | — | 1 | — | — | — | — | | |
| Erysipelas | | | 74 | 5 | 9 | | | 89 | 12 | 14 | | |
| Deaths | | — | | | | | 4 | | | | | |
| Infective enteritis or diarrhoea under 2 years | | | | | | | | | | | | |
| Deaths | 55 | 21 | 6 | 8 | 2 | 68 | 19 | 11 | 8 | 2 | | |
| Measles | | 19 | 36 | | 3 | | | 1,330 | | 798 | | |
| Deaths | 4 | — | — | — | — | 27 | 3 | 17 | 1 | 27 | | |
| Ophthalmia neonatorum | 104 | 13 | 34 | | — | 102 | 11 | 38 | | 1 | | |
| Deaths | | | | | | | | | | | | |
| Pneumonia, influenzal* | 1,435 | 125 | 72 | 14 | 25 | 1,128 | 78 | 22 | 2 | 23 | 1,614 | 151 |
| Deaths (from influenza) | 210 | 26 | 35 | — | 7 | 66 | 8 | 5 | 1 | 2 | | |
| Pneumonia, primary | | | 316 | 17 | | | | 274 | 21 | | | |
| Deaths | | 20 | | 12 | 16 | | 27 | | 21 | 27 | | |
| Polio-encephalitis, acute | 3 | — | | | | 1 | — | | | | | |
| Deaths | | — | | | | | — | | | | | |
| Poliomyelitis, acute | 8 | 2 | 1 | 1 | — | 6 | — | 1 | | — | | |
| Deaths | | — | | | | | — | | | | | |
| Puerperal fever | 7† | 7 | 10 | 2 | — | 6† | 6 | 16 | 2 | — | | |
| Deaths | | — | | | | | 2‡ | | | | | |
| Puerperal pyrexia | 144 | 12 | 19 | | 3 | 204 | 22 | 29 | | 5 | | |
| Deaths | | | | | | | | | | | | |
| Relapsing fever | — | — | | | — | 1 | — | — | | — | | |
| Deaths | | | | | | | | | | | | |
| Scarlet fever | 1,690 | 128 | 356 | 60 | 87 | 2,417 | 168 | 501 | 87 | 88 | 2,426 | 240 |
| Deaths | 1 | — | — | — | — | 4 | — | 1 | 2 | — | | |
| Small-pox | — | — | — | | — | — | — | — | | — | | |
| Deaths | — | — | | — | — | — | — | | — | — | | |
| Typhus fever | — | — | — | — | — | — | — | — | — | — | | |
| Deaths | | | | — | — | — | — | | — | — | | |
| Whooping-cough | | 221 | 457 | | 29 | | | 33 | | 7 | | |
| Deaths | 22 | 3 | 15 | 1 | — | 27 | 5 | — | 1 | 2 | | |
| Deaths (0-1 year) | 419 | 70 | 78 | 29 | 30 | 468 | 92 | 91 | 40 | 32 | | |
| Infant mortality rate (per 1,000 live births) | 64 | 58 | | | | 78 | 76 | | | | | |
| Deaths (excluding stillbirths) | 5,877 | 1,070 | 824 | 217 | 192 | 5,063 | 1,063 | 730 | 197 | 199 | | |
| Annual death rate (per 1,000 persons living) | 14.4 | 13.6 | 16.7 | 14.6 | 17.0 | 12.5 | 13.4 | 13.3 | 13.3 | 17.6 | | |
| Live births | 5,938 | 979 | 833 | 368 | 236 | 6,575 | 1,277 | 937 | 408 | 222 | | |
| Annual rate per 1,000 persons living | 14.6 | 12.5 | 16.9 | 24.7 | 20.9 | 16.2 | 16.1 | 19.1 | 27.6 | 19.7 | | |
| Stillbirths | 227 | 37 | 49 | | | 281 | 29 | | | | | |
| Rate per 1,000 total births (including stillborn) | 37 | 36 | 56 | | | 41 | 22 | | | | | |

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

‡ Deaths from puerperal sepsis.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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## QUERIES AND ANSWERS

### Diet in Intestinal Atony

Dr. L. ELWELL-JOHNSTON (London, S.W.19) writes: "S. A." asks in the *Journal* of January 28 (p. 198) (*a*) what foods are most apt to cause flatulence, (*b*) what drugs are best for treating flatulence. Flatulence is not caused so much by gas-producing foods as by gas-producing bacteria, of which the most troublesome is Welch's bacillus. The treatment is to change the intestinal flora by inoculating the bowel with *Bacillus acidophilus*. This can be done by giving yoghurt, as supplied by London dairies. The gas distension will lessen in a few days. By persevering with the treatment the gas-producing bacteria will be driven out and the flatulence will disappear. It will be necessary to feed the *Bacillus acidophilus* or it will not thrive. Lacto-dextrine (Coates and Cooper) is good for this purpose. What drugs are good for intestinal atrophy? Since vitamin A looks after the health of the alimentary tract foods abounding in vitamin A would be of more value than drug therapy. Spinach, parsley, and watercress, contain the most of vitamin A, and of these three parsley has the most, one ounce yielding 30,000 units. Intestinal atony is due to lack of tone of the muscular coat of the bowel wall. Vitamin $B_1$ is also necessary to improve the nutrition. Vitamin-containing foods are biological remedies and are more certain to correct and prevent functional orders than bottles of medicine, which are, after all, seldom of more use than as a token of good intentions.

### Tapeworm

Dr. ALISTAIR FRENCH (Greenford) writes in reply to "X. Y. Z." (January 28, p. 198): The following treatment is worthy of trial. Sodii bicarb., 20 grains t.d.s. for three days (no fats or alcohol on the last day); on the evening of the third day give calomel, 3 grains; on the fourth day, 2 drachms mag. sulph. at 8 a.m., and at 9 a.m. 30 grains of thymol in a capsule; repeat thymol, 30 grains, at 10 a.m. and again at 11 a.m.; at noon repeat mag. sulph., 2 drachms. No food whatsoever should be swallowed on this day until after the noon dose of salts has "worked," but drinks of plain water are permitted. This course of treatment can be repeated if necessary after fourteen days' rest.

"GEORGE" also writes: During the war a colleague in the hospital to which I was attached was afflicted with this parasite. This was in a country where the summer heat was almost intolerable. After two or three abortive attempts to get rid of the unwanted guest he decided to have another try. Before taking the filix mas, which was no doubt inert in that climate, he kept to his quarters, in a temperature of 110° F. or so, and starved himself. By evening he was feeling none too grand, so he called for his boy to fetch a whisky-and-soda. It was good. This was quickly followed by another, and yet another. That was the end of the tapeworm. I trust that my late colleague, who is now a highly placed and respected member of our profession, will forgive me for telling this story.

### Income Tax

*Expense of Attending Congress Meetings*

"M.D." attends annually the Oxford Ophthalmological Congress. Can the expenses incurred—that is, travelling and hotel bills—be deducted as expenses incurred by a professional man?

*** The question is not beyond dispute. The nearest approach to a judicial decision is that in Simpson *v.* Tate, and would be against the claim. But that case related to an assessment under Schedule E, and consequently the expenses had to be shown to be "necessary"—a restriction that does not apply to an assessment under Schedule D on professional profits. We advise "M.D." to make the claim, explaining that the expense is of the same nature as the maintenance of an up-to-date library on his specialty, but we could not advise him to incur the cost of an appeal if the allowance is refused.

## LETTERS, NOTES, ETC.

### Traumatic Neurasthenia : Correction

Dr. WILLIAM A. BREND writes: I much appreciate your kind review of my book *Traumatic Mental Disorders in Courts of Law* in your issue of February 4, but may I point out that I do not, as your reviewer states, appear in the courts as a medical witness, but as a medical assessor under the Workmen's Compensation Acts.

### The Apothecary Poet

It is always hard to realize that perhaps the purest of all "pure poets," who dedicated himself wholly to the service of the Muses, came of obscure stock without any "cultural background" and underwent three years' apprenticeship to a country doctor and two years' study at Guy's Hospital in the rough days of Bob Sawyer. But having obtained a licence to practise in July, 1816, John Keats turned his back straightway on medicine, and our profession knew him no more except as patient. For five years, until his death at the age of 26, Keats lived the life of a man of letters. We are reminded once again of the "Apothecary Poet" by a reprint from the *Annals of Medical History* of September, 1938. In this article Sir Robert Armstrong-Jones discourses with knowledge and insight on Keats and some of his friends.

### Materia Medica for Dispensers

Dr. M. E. LAMPARD (Colchester) writes: There is a certain part of the examination set by the Apothecaries' Hall for doctors' dispensers that is so out of date as to be quite archaic. A dispenser is expected to recognize all the crude drugs which are mentioned in the *British Pharmacopoeia*; not only are these never to be found in a doctor's dispensary nor to any extent in retail chemists' shops, but also it actually took my wholesale chemist a month to get them together. It is as though medical students were expected to go out into the fields in summer and collect their own foxglove leaves. Is it not time that this state of affairs was remedied? These doctors' dispensers would be much more use to us if, instead of having to recognize crude drugs and to know the tests for every impurity in the salts used in the *B.P.*, they were taught the elements of first aid and how to get ready instruments for minor operations.

### A Prescriber's List

Roberts and Co. of 76, Bond Street, London, W.1, have issued a sixth edition of their *Prescriber's List*. The arrangement is alphabetical. Particulars of each proprietary product are given in tabular form: maker's name, composition, form, approximate size, price, indications, and dosage. A copy, free of charge, will be sent by Messrs. Roberts to any member of the medical profession who has not yet received one.

### Disclaimer

Dr. DOUGLAS MCALPINE (London, W.) writes: I have been informed that my name has been associated recently, in a certain daily paper, with a cure for seasickness. Such references were made without my knowledge or consent, and I wish to disclaim any association with such a cure.